The RUBBER AGE

TECHNOLOGY DEPT.

MIXED CARLOADS

Consider, if you will, the possible desirability of taking mixed carload shipments of:

F. O. B. STERLINGTON, LA.

F. O. B. PAINESVILLE, OHIO

CAR LOADINGS MUST BE HEAVIER

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

Newsletter No. 11 *PUBLISHED BY RUBBER CHEMICALS DIVISION OF* DU PONT *NOV., 1942*

2-MT-Accelerator 808 Combinations Impart Desirable Properties to Buna S

IT is expected that a major portion of the Buna S to be produced will be used for the manufacture of pneumatic tires. Accordingly, when studying the compounding of Buna S, it is necessary to keep always in mind the physical properties required of stocks that are used in tire construction. Under service conditions a pneumatic tire is exposed not only to abrasive wear and flexing but also to continued distortion which causes friction within the tire itself and results in an increase in temperature.

The most important function of 2-MT-808 acceleration in Buna S is to produce stocks that exhibit to a high degree the properties required in pneumatic tire carcasses and treads. The high resilience, low hysteresis, and good abrasion resistance of Buna S stocks accelerated with 2-MT-808 warrant your investigation.

2-MT—808 COMBINATIONS—2-MT activated with Accelerator 808 is a particularly interesting accelerator combination for Buna S. Not only is the combination more economical to use than 2-MT alone, but it produces vulcanizates having better all-round physical properties. Buna S vulcanizates accelerated with 2-MT-808 are characterized by high moduli and tensile strengths and high elongations at break. While they compare favorably in these properties with Buna S stocks accelerated with Thionex (see Newsletter No. 9, September, 1942) the rate of cure at vulcanizing temperatures is not so fast and the curing range is not as broad as with Thionex.

The most outstanding characteristics of 2-MT-808 accelerated Buna S stocks are their high resilience and low mechanical hysteresis (low heat build-up). These properties, which are of particular importance in applications involving severe dynamic service (such as pneumatic tires,) are illustrated by the data in the accompanying table.

COMPARISON WITH OTHER ACCELERATORS—2-MT-808 acceleration of Buna S has advantages over other commonly used accelerators such as straight MBT, mercaptobenzothiazole reaction products and activated MBTS. The 2-MT-Accelerator 808 combination has a faster rate of cure and produces vulcanizates having higher moduli and tensile strengths, and superior resilience. If the curing time is adjusted so that the same state of cure is obtained in all stocks, the ultimate elongations at break and tear strengths are comparable. For any given time of cure at 287°F., vulcanizates accelerated with 2-MT-808 show only very slight impairment of stress-strain relationship when the cure is extended to as long as 180 minutes.

BUNA S COMPOUNDS ACCELERATED WITH 2-MT ACTIVATED BY ACCELERATOR 808

Compound No. 1693B—	314	329
Filler	50 parts Channel Black	50 parts Soft Black
Scorch Test—Cure 60 minutes at 227°F.		
Tensile Strength p.s.i.	125	100
Elongation at Break—%	745	885
Original Physical Test Data Cure 60 minutes at 287°F.		
Stress at 300% elongation p. s. i.	1800	625
Tensile strength p. s. i.	2825	1325
Elongation at Break—%	410	460
Hardness—Shore A Durometer	68	51
Tear Strength—lbs. per inch thickness	145	60
*Permanent Set in Elongation (ASTM) %	6	4
Pellet Tests Cure 130 minutes at 287°F		
Resilience (Yerzley Oscillograph) %	58	72.7
Heat Build-up (Goodrich Flexometer in 20 min. expressed as °C.)	56	67
Aged in 100°C. Air Oven Cure 60 minutes at 287°F		
Tensile Strength p.s.i.	1925	850
Elongation at Break—%	135	230
Hardness—Shore A Durometer	79	58

*Stretch samples 200%; hold 10 minutes; release and measure after 10 minutes rest.

Through the Mill

NATURAL AGING *resistance of neoprene vulcanizates has been shown to be excellent by a number of accelerated laboratory tests. In addition, the outstanding aging properties of neoprene have been confirmed by aging neoprene vulcanizates in the dark for 8 years at a temperature of 82°F. The following data clearly illustrates the natural aging resistance of neoprene. The formula that was used was:*

*Neoprene Type D**	100
Extra Light Calcined Magnesia	10
FF Wood Rosin	5
Neozone D	2
Sulfur	1
Zinc Oxide	10

**Type D has been replaced by our improved Type E.*

Yrs. Aged	Mod. 500%	Tb psi	Eb. %
0	1100	3700	1000
0.5	1150	3900	1000
2.0	1150	3900	900
4.0	1275	3650	850
8.0	1400	3375	810

EXPERIMENTAL QUANTITIES *of neoprene for use in developing stocks for products permitted by Order M 15-b are obtainable from us without specific allocation by the W.P.B. We are granted an experimental allocation each month from which we are permitted to ship experimental quantities of neoprene to any qualified manufacturer who is carrying out a development program. When the project reaches the production stage, allocations from the W.P.B. are necessary before we can make shipment.*

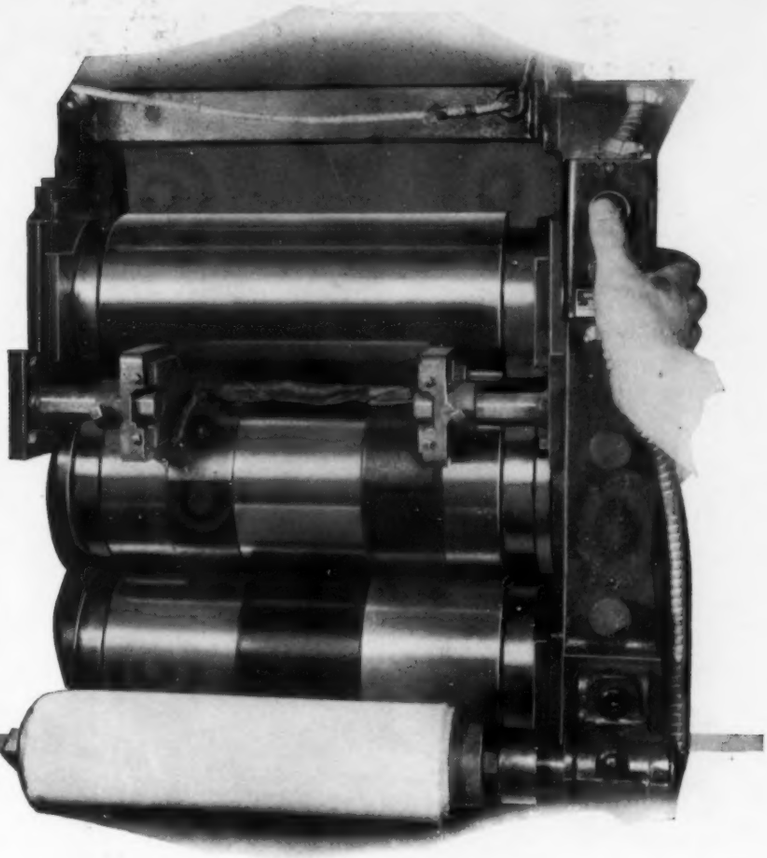
BUNA S COMPOUNDING *is one of our most important development projects. Make the du Pont Rubber Laboratory your headquarters for information concerning Buna S.*

RUBBER CHEMICALS DIVISION

Wilmington DU PONT *Delaware*

THE RUBBER AGE, published monthly by The Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscription in United States, $3.00 a year. Canada, $3.50; Foreign, $4.00. November, 1942. Vol. 52, No. 2.

TECHNOLOGY DEPT.



It's putting the squeeze on guesswork

Here is a small batch of Hycar being calendered in our Customer Service laboratory. When these tests are completed there will be no room for doubt about the sheeting and frictioning properties of this particular compound. By the time you put it into production similar test operations will have established all its other essential characteristics. And, like all good recipes, it can be modified to fit individual factory practices.

To the rubber fabricator using Hycar the net result is smooth, trouble-free production because operating "bugs" have been ironed out by actual trial runs in Hycar's Customer Service laboratory.

We urge you to use this service lab, for it was designed, equipped and staffed to help you get from Hycar all the important and significant results of which this versatile synthetic is capable.

HYCAR CHEMICAL COMPANY, *Akron, Ohio*

HYCAR *Synthetic* **Rubber**

LARGEST INDEPENDENT PRODUCER IN AMERICA OF BUTADIENE SYNTHETIC RUBBER

C-700 ALUMINAS make rubber footwear tougher

From Alaska to the Egyptian desert, rubber footwear for the Army and Navy is taking a real beating. That's why a large part of the production of C-700 Aluminas is being allocated for rubber reinforcing pigment to rubber footwear makers.

Rubber compounded with C-700 Aluminas as reinforcing pigments is high in resilience and rubbery properties with high pigment loadings. It has good resistance to abrasion, high strength at elevated temperatures, high modulus with high elasticity, superior aging characteristics. These characteristics make the finished product—surgical rubber goods or gas masks—tougher and longer-lived.

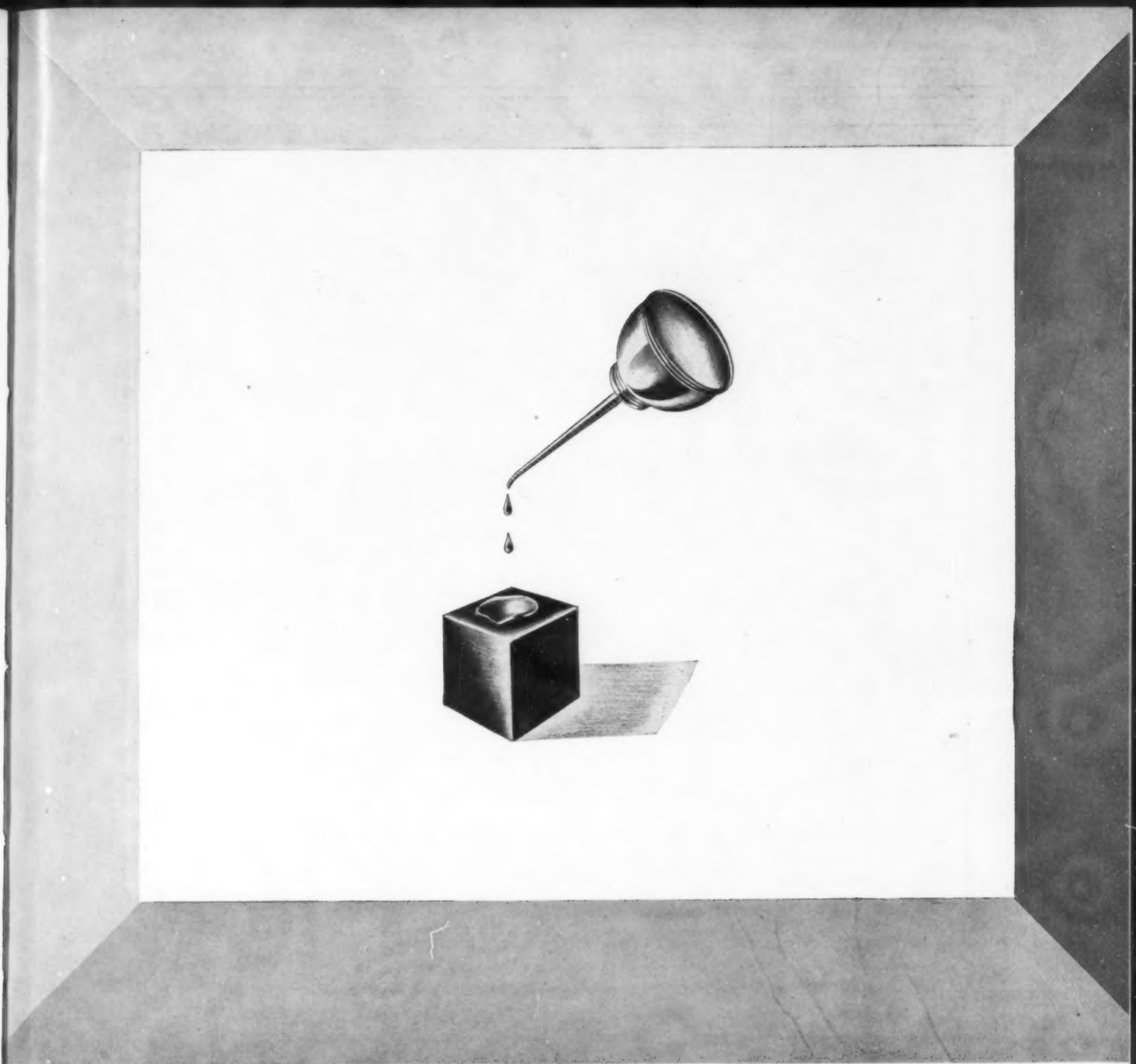
In addition, the rubber has a high modulus in the uncured compound, and unusually good tackiness of uncured stock. The rubber has high resistance to hot and cold tear, low heat build-up and good heat transfer, low specific gravity, good dielectric properties. The pigment particles are extremely fine and uniform. They impart no odor to the rubber, and no color.

If you are interested in a better compounding material for the military rubber goods you are making, ask us for samples of C-700 Aluminas. Write ALUMINUM COMPANY OF AMERICA (*Sales Agent for* ALUMINUM ORE COMPANY) 1970 Gulf Building, Pittsburgh, Pennsylvania.

ALORCO

ALUMINUM ORE COMPANY

ALUMINUM AND FLUORINE COMPOUNDS



The Block of Rubber that didn't Bulge!

OIL and rubber *never* got along until Thiokol* synthetic rubber was offered commercially thirteen years ago. After that, industry found hundreds of uses for this pioneer American synthetic.

To name a few: oil-proof service station hose, gaskets, grommets, packings... corona-resisting cable sheaths... ink-proof printing press rollers and newspaper blankets.

Today, war uses for Thiokol synthetic rubber naturally come first. Except to say that it is a vital material in the construction of airplanes, tanks and ships, little information on these military applications can be disclosed.

No secret, however, is the fact that the Thiokol Corporation research and development staff has amassed a wealth of data on new forms and new applications that multiplies the usefulness of Thiokol synthetic rubber.

For war product problems, this data and prompt technical cooperation are yours for the asking.

Thiokol Corporation, Trenton, New Jersey

Thiokol*
SYNTHETIC RUBBER
"America's First"

*Thiokol Corporation trade-mark, Reg. U. S. Pat. Off.

A Reasonable Assumption

We number among our regular customers many of the largest consumers of zinc oxide in the country; they have been with us for many years; it may be that their patronage is inspired solely by the quality of our products. Perhaps they like our *way* of doing business. On the other hand, their preference for ST. JOE Lead-Free ZINC OXIDES may be born of a combination of the two factors mentioned above. Whatever the reason may be, if we are able to satisfy others, chances are that we could fulfill your requirements equally well.

ST. JOSEPH LEAD COMPANY

250 PARK AVENUE, NEW YORK, N. Y.

MADE BY THE LARGEST PRODUCER OF LEAD IN THE UNITED STATES

Something Worth Remembering

Anything which helps to save time and materials today is certainly *worth remembering* and *using*—and that fits the CAPITOL PROCESS OF LINER TREATMENT to a "T". This is the economical and efficient process which helps prevent adhesion of rubber to liners and aids in prolonging the life of cotton fabrics. Capitol Treated Liners have already proved their value in a large number of rubber plants. If you have not tried this process yet, SEND US A 50—OR 100 YARD LINER AND WE WILL TREAT IT WITHOUT CHARGE so you may test it in your own plant. Write today for full particulars.

★

TEXTILE PROOFERS, INC.

One Gates Avenue Jersey City, N. J.

Originators of the Capitol Process of Liner Treatment

Outstanding NEW USE

for a LONG-ESTABLISHED PRODUCT

AC

PARRAS

Washed and Dried

GUAYULE

TACKIFIER and EXTENDER for

BUNA S

DISTRIBUTED BY

RUBBER RESERVE COMPANY

•

AMERICAN CYANAMID

& CHEMICAL CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

REPRESENTATIVES OF CIA HULERA DE PARRAS, S. A., MEXICO, PRODUCER

AMERICA'S SCRAP RUBBER SUPPLY

Barrett

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

*Trademark Reg. U. S. Pat. Off.

As America's vital rubber reserves dwindle daily it is reassuring to know that there is no shortage of Barrett Carbonex S*. For this improved coal-tar compounding material will have an important role in stretching the nation's scrap rubber supply.

In reclaim stocks Carbonex S develops these important characteristics:

EXTENDER – up to 15% of the rubber hydrocarbon.

REINFORCING SOFTENER – A highly practical control of toughness.

RAPID EXTRUSION – Minimizes swelling, sagging and flattening.

IMPROVED TEAR RESISTANCE An important factor to increase wear.

PROMOTES BETTER PROCESSING – Calendering and extruding properties greatly improved.

EXCELLENT AGING QUALITIES – A final great help in conservation.

The staff of the Barrett Research Laboratories will be glad to cooperate with you in the use of Carbonex S and other Barrett rubber compounding materials to meet your requirements. Wire or write today for full information.

★ ★ ★ ONE OF AMERICA'S GREAT BASIC BUSINESSES ★ ★ ★

Announcing THIOGEN

TRADE MARK

W
-C=C-

REG. U. S. PAT. OFFICE

REPRESENTATIVE FORMULA

Hycar O.R.–15	100.
Stearic acid	0.5
THIOGEN 10*	25.
Benzothiazyl disulfide	1.25
Diphenyl guanidine	0.25
Channel black	50.
Zinc oxide	5.
Sulfur	None
Cure (min. @ 45 lbs.)	30
Tensile @ break (psi.)	4200
Elongation @ break (%)	680
Shore hardness	71
Abrasion (DuPont index)	8

Contains 2.5 parts active sulfur

Proper sulfur distribution is a problem with the butadiene copolymers, particularly those of the Buna N type. THIOGEN, a solution of active sulfur in a pure hydrocarbon base, offers the possibility of readily obtaining excellent distribution of sulfur where such distribution is not obtainable through ordinary compounding means. THIOGEN 6 and THIOGEN 10 contain 6% and 10% active sulfur, respectively.

WILMINGTON CHEMICAL CORPORATION

10 East 40th Street · New York, N. Y.

Plant and Laboratory: Wilmington, Delaware

COOPERATION of thousands of scrap rubber collectors, with our Company, enables us to very substantially help the Rubber Industry to meet the unprecedented reclaimed rubber requirements, brought about by the war effort.

SCRAP RUBBER FOR VICTORY

H. MUEHLSTEIN & CO., INC.

122 EAST 42ND STREET, NEW YORK, N. Y.

CHICAGO	AKRON	LOS ANGELES	MEMPHIS	BOSTON
327 So. La Salle St.	250 Jewett St.	318 W. 9th St.	62 Auction Ave.	31 St. James Ave.

Announcing

ZINC OXIDES

French and American Process

for use in

natural, synthetic and reclaimed rubber compounds

Now available from

R. W. GREEFF & CO., INC.

Exclusive Agents

for

GULTON MFG. CORP.,
Metuchen, N. J.

Chicago Warehouse Stocks

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R. W. GREEFF & CO., INC.

10 Rockefeller Plaza, New York City
1905 Tribune Tower, Chicago, Illinois

Advance

DIBENZYL ETHER

★
ELASTICATOR FOR SYNTHETICS

★ High Rebound Elasticity
★ Good Friction Tack
★ Low Hysteresis Loss
★ Uniform Quality

In addition we announce two new plasticizers possessing desirable special properties for softening the rubber replacement synthetics.

PLASTOFLEX No. 10
For normal plasticizing action with good resilience

PLASTOFLEX No. 20
Where greater softening action is essential

★ WRITE FOR SAMPLE AND DATA

ADVANCE SOLVENTS & CHEMICAL CORPORATION
245 FIFTH AVENUE · NEW YORK, N. Y.

Breaks that put the Brakes on Production . . .

Banburys have a gigantic task ahead . . . Their estimated production load for 1943 will be more than double that of previous years' peaks. They must be maintained to assure fulfillment of the vital program of supply . . . Breaks like these in the illustration above are happening to Banbury rotors because of tougher loads and unchecked weaknesses . . . Important production suffers irreplacable loss when such breaks occur . . . Interstate Service can help you prevent such breaks in your Banburys by checking and correcting weaknesses—and by re-designing and re-building Banburys to give greater production more efficiently.

Avoid equipment tie-ups . . . Contact us at once for a re-building schedule if your Banbury is worn.

SERVING THE IWS RUBBER INDUSTRY

INTERSTATE WELDING SERVICE

Main Plant: 914 Miami Street . . . AKRON, OHIO . . . Phone: JE 7970

EXCLUSIVE SPECIALISTS IN BANBURY MIXER REBUILDING

Baruch Committee Recommends GROUND SCRAP

11. The Committee also suggests the introduction into the manufacture of "camelback" for the retreading of civilian tires, the practice of adding up to 20 percent of finely ground tire treads into all reclaimed rubber tread stocks. This practice will improve the wearing qualities of the reclaimed rubber required for their production.

Extract from the Baruch Committee Report, Sept. 10, 1942.

Ground Scrap is also suitable for use in the manufacture of any molded rubber articles.

SPAN GRINDING MILL

Reduces all grades of vulcanized rubber scrap to fine powder form ready to be mixed with ordinary molding compounds.

Provided with an attached vibrating screen, the latest model SPAN GRINDING MILL (Type VIII) is a compact, self-contained unit producing a uniform material automatically and at low cost. Capacity 200 to 400 lbs. per hour. Power required, 25 H.P.

You can help conserve essential rubber by using the Span Grinding Mill — Send for full information.

•

M. PANCORBO

155 JOHN STREET, NEW YORK, N. Y.

Here's Something you want to *Know!*

- Electron Microscope Analysis reveals that Lampblack has a wider distribution curve than any other carbon colloid.
- This ensures the presence of reinforcing particles so essential to synthetic as well as to natural rubber.
- The average surface area is, however, in the soft or semi-reinforcing region. This ensures the low hysteresis essential to offset the heating-up tendencies of synthetic rubber.
- Special grades controlled as to pH, oil content and rubber compounding properties are available.

Samples and technical information will be sent upon request.

L M & G

LAMP BLACKS

With a record of more than 90 years for excellence.

THE L. MARTIN COMPANY, INC.

UNIT OF COLUMBIAN CARBON COMPANY

Largest manufacturers of high grade lamp black in the world

BINNEY & SMITH CO.

DISTRIBUTOR OF RUBBER BLACKS

41 East 42nd Street, New York, N. Y.

NOTICE: While we are permitted to sell up to 200 pounds per month to customers conducting certain types of experimental work . . . all regular allocations of Perbunan synthetic rubber are now made by the Rubber and Rubber Products Branch of the War Production Board.

PERBUNAN
resists oil unusually well!

PERBUNAN
has exceptional resistance to heat or cold!

PERBUNAN
has an especially long life!

Write **STANCO DISTRIBUTORS, INC.** 26 BROADWAY, NEW YORK CITY
Warehouse stocks in New Jersey, Louisiana and California

BAIRD

MANUFACTURERS' CRUDE RUBBER PURCHASE PERMITS

▲

• Our long experience since 1903, together with our friendly relations with our old and new customers ideally equips us for the prompt, efficient and thoroughly satisfactory handling of

Manufacturers' Crude Rubber Purchase Permits

• We shall continue to appreciate and respect the business of our old friends and assure the new ones that their orders will be handled with courtesy and efficiency . . . . . .

▲

BAIRD RUBBER & TRADING CO., Inc.
WOOLWORTH BUILDING
233 Broadway New York

BArclay 7-1960

WILLIAM T. BAIRD, JR. COLLIER W. BAIRD
HAROLD W. HOLCOMBE DENIS P. MOCHARY

PREVENT BIN-CURE with

CRYSTEX insoluble SULPHUR

CRYSTEX has recently demonstrated its ability to prevent bin-cure and dryness which usually occur when a reclaim compound is used.

CRYSTEX is an amorphous sulphur especially prepared to prevent bloom in uncured rubber stocks.

CRYSTEX should be used in place of rubbermakers' sulphur where repair treads or retreads are put up without a cushion. Where a cushion is put on the tread, and Holland on top of the cushion, it is only necessary to employ CRYSTEX in the cushion.

Write to our nearest office for a working sample and complete information on CRYSTEX (insoluble) Sulphur.

OTHER RUBBERMAKERS' CHEMICALS

Commercial Rubbermakers' Sulphur, Tire Brand, 99½% Pure—Refined Rubbermakers' Sulphur, Tube Brand, 100% Pure—Caustic Soda — Carbon Tetrachloride — Sulphur Chloride — Carbon Bisulphide

Stauffer CHEMICAL

STAUFFER CHEMICAL CO.

420 LEXINGTON AVE., NEW YORK, N. Y.
230 NO. MICH. AVE., CHICAGO, ILL.
624 CALIFORNIA ST., SAN FRANCISCO, CAL.
555 SO. FLOWER ST., LOS ANGELES, CAL.
424 OHIO BUILDING, AKRON, OHIO
NORTH PORTLAND, OREGON
FREEPORT, TEXAS APOPKA, FLORIDA

comparatively better

TABLE VI—A COMPARISON OF VARIOUS SOFTENERS IN A BUNA S TREAD COMPOUND

Test Recipe

Hycar OS-30	100.
Wyex	40.
Zinc Oxide	5.
Sulfur	2.
Stearic Acid	2.
Captax	1.
DOTG	2
Softener	10.

Curing Temperature—287° F.

Softener	Stress @ 400% (lbs./sq.in.)	Maximum Tensile (lbs./sq.in.)	Elongation (%)	Abrasion Resistance (%)	Heat Generation (° F.)	Energy Rebound (%)	Tear Resistance (%)	3 Minute Plasticity
SDO #10	1820	2500	480	100	272	64.8	100	1.56
Gum of Turpentine	980	2660	660	64	321	57.0	110	1.52
Tarzac	1560	2400	530	82	292	58.7	117	1.54
Guayule Resin	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Piccocizer "30"	1920	2400	450	103	276	64.2	99	1.56
Paraflow	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Circo Light Oil	1700	1720	407	102	279	63.9	90	1.53
Wood Rosin	780*	2450	827	62	334	53.7	112	1.55
Pine Tar Oil	840	2460	545	64	301	60.6	122	1.62
Trexol	1650	2160	435	89	277	63.2	85	1.65
Velogum	1740	2250	475	76	298	59.1	99	1.53
Mineral Rubber	1350	2480	570	78	293	59.4	113	1.80
Pine Fatty Acid Pitch	980	2490	663	64	301	58.6	117	1.75
Crude Tall Oil	1000	2450	650	70	299	59.2	108	1.55
BRT #3	1220	1790	375	96	279	61.3	94	1.48
BRT #7	1220	1860	337	92	279	61.3	96	1.59
								1.74

* at 500%

This Table is reproduced from an article on the compounding and processing of Synthetic Rubber by C. A. Carlton and E. B. Reinbold, of J. M. Huber, Inc., appearing in the October issue of Rubber Age. It tells the story of the physical advantages of PICCOCIZER "30" as a plasticizer for the Buna S compounds . . . *It is low in cost, too.*

STANDARD

Chemical Company

AKRON SAVINGS AND LOAN BLDG. AKRON, OHIO

FOR VICTORY TODAY
AND SOUND BUSINESS TOMORROW

Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Pay-roll Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save With
War Savings Bonds

This Space Is a Contribution to America's All-Out War Program by

THE RUBBER AGE

To offset the terrific heat generated in heavy-duty tires, do as many companies are doing, change over to Continental "AA." This new type black contributes less to heat generation than do standard grades — *enough* less to offset the *extra* heat that causes most heavy-duty tire failure. Leading tire manufacturers have confirmed this after exhaustive tests with Continental "AA" in their own formulations.

The lower heat generating characteristics of Continental "AA" are the result of special processing, and maintain just the right balance between wear-resistance in the tread compound and heat generation in the tire itself. In these times, when truck, bus and combat tires are subjected to the severest operating conditions, often in very hot climates, the contribution of Continental "AA" is a vital one.

IT'S EASIER PROCESSING, TOO!

Continental "AA" is easier processing, too — another advantage over standard blacks customarily used for passenger car tires, and particularly welcome in wartime production.

To meet the demand for this type black, Continental has rearranged its production set-up and now can supply as much as may be required. The same high quality that characterizes all grades of Continental Black applies to this new low heat generating type. Send for samples — find out how completely Continental "AA" fills your needs.

TRY IT IN YOUR BUNA S FORMULATIONS

Experimenting with this type synthetic rubber? Now is an excellent time to investigate the characteristics of Continental "AA" in your Buna S formulations. Samples for this purpose are also available on request.

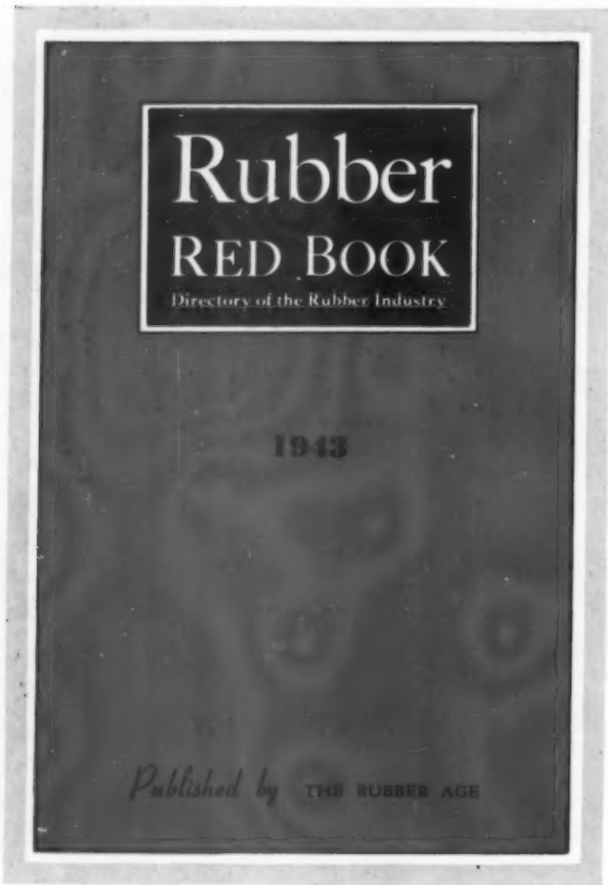
Continental **CARBON COMPANY**

295 MADISON AVENUE • NEW YORK, N. Y.

Akron Sales Office: Peoples Bank Building, Akron, Ohio • SALES REPRESENTATIVES: Ernest Jacoby & Co., Boston, Mass. • Marshall Dill, Los Angeles and San Francisco, Calif.

★ ADVANCE ANNOUNCEMENT ★

1943 Rubber Red Book



Is Scheduled for Publication in MAY, 1943

The next issue of the RUBBER RED BOOK—the only complete Directory of the Rubber Industry—will appear about May 15, 1943. It will reflect the many changes in personnel, products, materials, equipment, processes, etc., which have occurred in the past two years as a result of the war. Accordingly, an unusual amount of interest has already been expressed by the industry in the 1943 edition—the fourth to be published.

The RUBBER RED BOOK occupies an enviable position. It is an indispensable tool of purchasing agents in rubber factories and is constantly consulted by the research, sales and development departments of these factories. Suppliers, too, find it a valuable adjunct to their sales efforts because of the mass of data it contains on the industry. Among others who make constant use of it are the procurement divisions of the Army and Navy, the development and research laboratories of the government, and in fact every department in Washington concerned with rubber, where scores of copies are in daily use.

As a result, sellers of materials, supplies and equipment used by rubber manufacturers will, we believe, reach a more interested and responsive audience than ever before in the next edition of this directory. Advertisers will find this a most effective medium in which to call attention to their products or to keep their names prominently before their customers if they cannot fill orders for their regular products for the duration.

There will be no increase in advertising rates (see adjacent column for the cost of space). In view of the unusual importance of the 1943 issue we suggest you send in your reservation early, particularly if you are interested in any special positions.

1943 EDITION

Size: 6 x 9 in.	**Cloth Bound**
Over 500 Pages	**Price: $5.00**
Closing Date - -	**April 1, 1943**
Publication Date -	**May 15, 1943**

COST OF SPACE

1 page	$75.	2 pages	$140.
½ page	40.	¼ page	25.
Color, Red	extra,		25.
" Other colors	extra,		35.
Special positions	extra,		15 %
Bleed page	extra,		10 %

For complete rates and mechanical requirements, write for latest rate card.

If You Budget Your Advertising Expenditures

Make provision *now* in your 1943 budget for ample space in the 1943 RUBBER RED BOOK — the only medium which keeps your name prominently before the rubber industry for a full two year period at a cost of but a few cents a day.

★

***Published by* THE RUBBER AGE, 250 West 57th Street, New York City**

WE ARE SERVING UNCLE SAM

Operating under the direct control and supervision of the Rubber Reserve Co. — a Federal agency — in the purchase and handling of scrap rubber, we are loaning our experience and organization to the promotion of the war effort and have ceased to operate on our own account for the period of the emergency.

We are honored in having this opportunity to do our part in helping to overcome the rubber shortage.

Serving the Trade since 1868

THE LOEWENTHAL CO.

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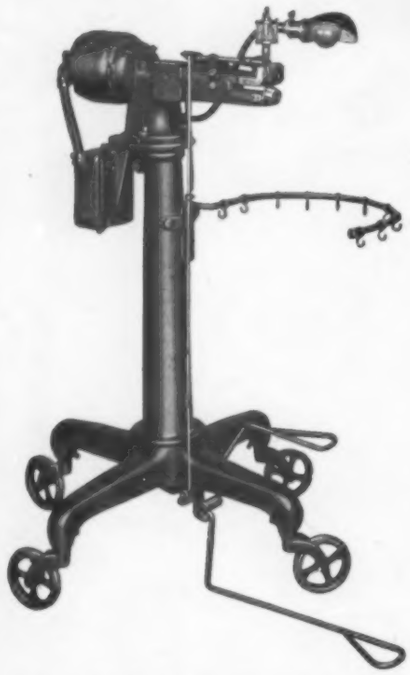

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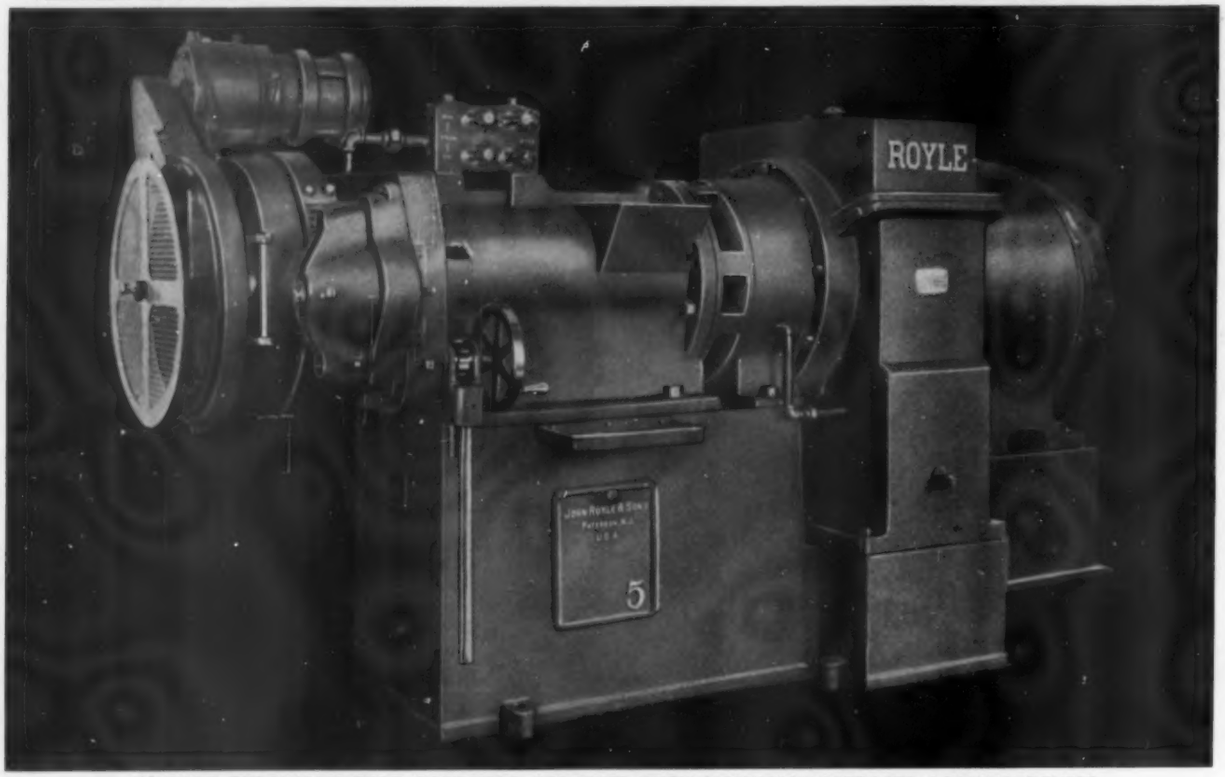

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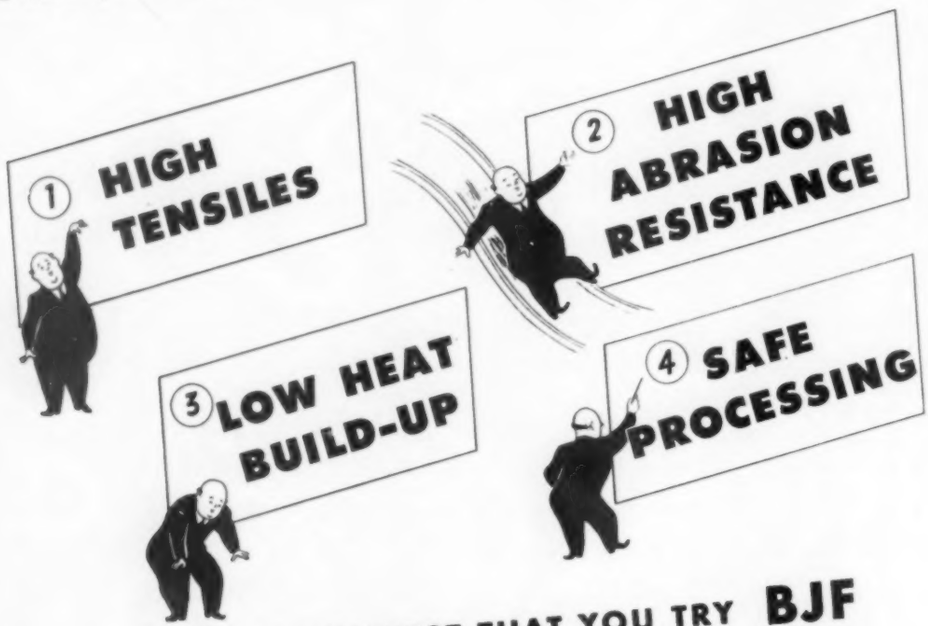

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The **RUBBER AGE**

VOL. 52, No. 2 **NOVEMBER, 1942**

Current Importance of Synthetic Latices and a Review of One of Them (Neoprene Latex Type 571)

BY H. H. ABERNATHY

Organic Chemicals Department, Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware

SINCE the restriction of the use of rubber a large amount of new data has been accumulated on the synthetic elastomers and much of the data on the older types of synthetics have been reviewed, yet in all this quantity of material there is little on the synthetic latices. While it is true that natural rubber latex in the past has accounted for a comparatively small percentage (approximately 2.8% in 1935 and 5.2% in 1940) of American rubber usage many items made from it were essential for civilian and military purposes. For many essential items synthetic latices must now be used and, further, war needs have created demands for latices which could produce films superior to rubber in important respects.

Fears are being expressed that the quantity of processing equipment now available is not sufficient to handle the vast quantities of dry synthetic rubber soon to be produced. These fears are based on the fact that synthetics may require more power and more time to process. Possibly a way of partially alleviating this danger is by making certain types of molded goods and tubing from a synthetic latex which can be gelled. Gelation molding requires no milling, no tubing, no presses. Solvents are scarce, water is plentiful. Latex should be used in place of cements wherever possible.

In view of the above it is believed that as much information concerning the synthetic latices as possible should be given technical men in order that they may more adequately determine the best material for a given purpose. Furthermore, procurement officers and purchasers need to know what performance can be expected from articles made from the synthetic latices in order that they may write proper and feasible specifications. Research and development workers need to know about these latices in their search for materials which will meet the increasingly exacting needs of the armed forces. It is with these things in mind that this paper describing the handling, processing, and properties of one of the synthetic latices is written.

Note: This article is based on a paper delivered by the author at a meeting of the New York Group, Rubber Division, A.C.S., held in New York City on October 16, 1942.

NEOPRENE LATEX TYPE 571

This latex has been recently introduced as a replacement for Neoprene Latex Type 57. It is said to be the approximate equivalent of the latter but available in larger quantities, due to a shorter manufacturing system. It is, like most other recent neoprene latices, a 50% aqueous dispersion of polymerized chloroprene having a specific gravity of 1.10 and a pH of 11.0 to 12.0.

Handling: This latex must be handled in some respects differently than natural latex. Due to its comparatively high alkalinity it must be stored in alkali resistant containers, such as ones made of stainless steel, enameled ware, SDO coated metal, glass, or paraffin-lined metal. The last is not generally satisfactory, due to the tendency of paraffin coatings to crack. The latex is more sensitive to coagulation by salts, even mono-valent ones, acids, and local dehydration than is natural latex.

High speed agitation does not produce in neoprene latex, as it does in rubber latex, a sudden coagulation of the mass. The process in the former case is a slow and continuous one which begins almost immediately and persists until most of the neoprene is removed from the suspension. The phenomenon is evident even with normal agitation. Therefore, continuous circulating systems, such as are used with certain types of dip tanks, should be adjusted so that circulation is intermittent. Generally good results are obtained if the latex and compounds made from it are stirred only two or three times every twenty-four hours.

Compounding: Materials may be mixed into Neoprene Latex Type 571 using techniques similar to those used with natural latex. However, the electrolyte content of the neoprene latex compound should always be kept at a minimum. Materials which stabilize rubber latex compounds, such as soaps, certain proteins, and wetting agents, also stabilize Type 571 compounds. Proteins, such as casein and glue, thicken the latex while certain other thickening agents, such as the pectinates, do not, sometimes because they are not compatible. Dipentamethylene thiuram tetrasulfide (Tetrone A) does not thicken Neoprene Latex Type 571 as it does other types of neoprene latex. It is not necessary to use accelerators or sulfur to secure good Type 571 vulcanizates but it is necessary to use a minimum of about three parts on the neoprene of a metallic oxide, preferably zinc oxide.

An antioxidant is practically always used in the Type 571 compounds. Most rubber latex antioxidants, such as phenyl beta naphthylamine (Neozone D), are satisfactory for use in Type 571, although certain ones have no value. With certain outstanding exceptions fillers and pigments serve the same general purposes in Type 571 as they do in dry elastomer compounding. Clay used in small quantities (ten parts on the neoprene) seems to function as an activator. Lithopone, recommended for use with Neoprene Latex Type 57, appears to have a retarding action. In a succeeding portion of this paper the properties of vulcanizates containing various compounding ingredients are shown.

Processing: Neoprene Latex Type 571 may easily be adapted to most of the processes by which articles are made from natural latex. Many such processes are patented. However, it is not the purpose of this paper to discuss these patents but merely to point out how articles can be made from neoprene latex.

Spraying: Neoprene Latex Type 571 or its compounds may be sprayed onto fabrics, pads, or other materials to produce smooth, uniform coatings. If a thick coating is necessary, it is desirable to spray a compound having a high solids content in order to prevent "curtaining." Such compounds may be prepared by adding high solids (60 to 65%) dispersions of compounding ingredients (pigments, fillers). Spraying compounds should be stabilized by the addition of one to two parts of a good stabilizer, such as a fatty alcohol sulfate (Aquarex D).

Dipping: Dipped goods may be made from neoprene latex by any of the accepted techniques.

Coatings and Impregnations: These may be made by using conventional spreaders, squeeze roll equipment, or spray techniques.

Molding: Type 571 may be gelled with the usual rubber latex gelling agents and articles made by causing gelation to take place in molds. Articles of very intricate design may be made to close tolerances. Neoprene latex gels shrink more rapidly and to a greater degree than do rubber latex gels. It is usually desirable to use compounds having a high solids content in gelation molding work.

Leaching: Where leaching is desirable articles made from neoprene latex usually require a longer washing time than those made from rubber latex. This is due to the slower diffusion of substances through neoprene. Four hours in 50° C. water is usually satisfactory for neoprene articles.

Curing: As is the case with vulcanizates from other types of neoprene latex, the degree of cure of those from Neoprene Latex Type 571 seems to be dependent on the total heat input. However, the amount of heat required for the latter is a little greater. For maximum resiliency and modulus and minimum permanent set sixty minutes at 140° C. in air or steam is desirable. For good tear resistance thirty minutes at 140° C. is sufficient. The shorter time is also sufficient for general purpose curing. For maximum sunlight resistance a long, low temperature cure, such as two hours at 100° C., seems to be best. The aging of all cures is excellent. The maximum resistance to fracture at very low temperatures apparently is attained in thirty minutes at 140° C.

Performance of Films: The following data are shown to provide a basis for the development of compounds to meet various requirements and show what performance may be expected of films from Type 571 compounds. Many general statements have been made in the above review without supporting data because the presentation of such data would be unduly long and boresome.

Test films were made by filtration through porous porcelain cups under reduced pressure. This method was used because it provides films about 0.020 inch thick of good uniformity. Stress strain, permanent set, and tear tests were made by A.S.T.M. methods. Other test methods are indicated in the footnotes. Compounds were prepared in the conventional manner. All weights are given on a dry basis.

Compound Number I—Base Recipe

Neoprene (from Latex Type 571)	100.0
Zinc Oxide	5.0
Phenyl beta naphthylamine	2.0
Casein	0.25
Fatty alcohol sulfate	0.25

Table I—Physical Test Data—Compound No I

	Air Cure—Minutes at 140° C.		
	15	*30*	*60*
Stress at 600%—psi	475	875	1050
Tensile Strength at Break—psi	3450	4225	3800
Elongation at Break—%	995	895	870
Hardness—Shore A	47	49	50
A.S.T.M. Permanent Set—%	4	3	3
Winkelmann Tear Test—Lbs. per inch of width	45	40	30
Brittle Point*—° F.	—22	—40	—40
Volume Increase—% after 48 hours' immersion at 100° C.			
in water	70.5	58.8	59.0
in kerosene	95.8	90.5	91.0

This simple compound is shown in order to establish a yardstick for judging the ones which follow. Aging data are not shown because they are excellent for all stocks. The flame resistance and resistance to deterioration by sunlight of the stocks are, like those of other neoprenes, also excellent.

Compound Numbers II and III shown below illustrate the activating effect of ten parts of clay and the retarding effect of ten parts of lithopone. It will be noticed that properties other than stress strain remain practically unaffected.

Table II—Physical Test Data—Compound Nos. II and III

Compound No. II—Base Recipe plus 10 parts clay

	Air Cure—Minutes at 140° C.		
	15	*30*	*60*
Stress at 600%—psi	850	975	1025
Tensile Strength at Break—psi	4025	4150	4550
Elongation at Break—%	930	840	840
Hardness—Shore A	49	51	51
A.S.T.M. Permanent Set—%	6	5	5
Winkelman Tear Test—Lbs. per inch of width	60	50	50
Brittle Point—° F.	—40	—40	—40
Volume Increase—% after 48 hours' immersion at 100° C.			
in water	—	55.5	—
in kerosene	—	87.2	—

Compound No. III—Base Recipe plus 10 parts lithopone

Stress at 600%—psi	575	625	700
Tensile Strength at Break—psi	3000	3175	3150
Elongation at Break—%	925	890	860
Hardness—Shore A	47	48	48
A.S.T.M. Permanent Set—%	9	7	7
Winkelmann Tear Test — Lbs. per inch of width	60	60	40
Brittle Point—° F.	—22	—40	—40
Volume Increase—% after 48 hours' immersion at 100° C.			
in water	—	60.2	—
in kerosene	—	89.0	—

*Brittle point was determined in the following manner. A series of 2" x ½" strips formed into loops were fastened to a board by means of small tacks and placed in the cold air box at —10° C. for one hour. At the end of this time one of the loops was compressed sharply by means of a blow with a small hammer placed in the box. If the loop did not crack the temperature was rapidly lowered to —20° C. and held for an hour and another loop of the same stock tested. This procedure was continued with 10-degree drops in temperature between each test until a break was obtained.

Many specifications now require a stock which will remain flexible at very low temperatures. Compound No. IV below illustrates the type of stock indicated for this type of service. The brittle or crack point of this stock in 0.020" films occurs at —85° F. and the material is very flexible at —58° F. Possibly more plasticizer could have been included in this stock since some tests have indicated that up to thirty parts of ester plasticizer could be used in Neoprene Latex Type 571 compounds without exudation. It will be noticed that the use of the plasticizer has reduced the tensile strength of the stock considerably, as would be expected. Permanent set is higher, tear resistance lower, and the stock is softer. Volume increase in kerosene is lower, probably due to extraction of the plasticizer. Volume increase in water is about the same.

Table III—Physical Test Data—Compound No. IV

Base Recipe plus 10 parts semi-reinforcing Black and 20 parts dibutyl sebacate

	Air Cure—Minutes at 140° C.		
	15	*30*	*60*
Stress at 600%—psi	375	525	600
Tensile Strength at Break—psi	2100	2600	2650
Elongation at Break—%	900	880	860
Hardness—Shore A	35	38	39
A.S.T.M. Permanent Set—%	12	10	10
Winkelman Tear Test—Lbs. per inch of width	30	30	30
Brittle Point—°F.	—76	—85	—85
Volume Increase—% after 48 hours' immersion at 100° C.			
in water	—	60.9	—
in kerosene	—	46.0	—

For certain types of service a tear resistant stock is required. While the resistance to tear of vulcanizates from Neoprene Latex Type 571 compounds is generally poorer than that of rubber latex vulcanizates, it is possible to produce stocks having good resistance to tear. The following stock shows a resistance to tear of 150 pounds per inch of width (30 minutes at 140° C. cure) as compared with 30 to 60 pounds for the stocks previously discussed.

Table IV—Physical Test Data—Compound No. V

Base recipe plus 50 parts semi-reinforcing black

	Air Cure—Minutes at 140° C.		
	15	*30*	*60*
Stress at 600%—psi	1700	2075	—
Tensile Strength at Break—psi	2100	2200	2050
Elongation at Break—%	720	650	595
Hardness—Shore A	72	74	75
A.S.T.M. Permanent Set—%	23	18	16
Winkelmann Tear Test — Lbs. per inch of width	190	150	110
Volume Increase—% after 48 hours' immersion at 100° C.			
in water	—	31.3	—
in kerosene	—	61.1	—

The same results could have been secured with a somewhat smaller quantity of channel black. However, such compounds are much less stable in the wet state than compounds with other types of blacks. Soft blacks produce softer, less tear resistant stocks having about the same permanent set and swell in water and in kerosene.

Conclusions: Synthetic latices are important to the war effort in that they can be used as substitutes for

(Continued on Page 132)

How the Production of Air-Foam Rubber Is Controlled at the Goodyear Factory

By H. C. JENKS[1] and J. GROTZINGER[2]

AIR-FOAM, a development of the Goodyear Tire & Rubber Company, Akron, Ohio, is a rubber product made from latex, which along with the proper additional ingredients is whipped into a fluffy, sponge-like mass. Final shape is obtained by pouring into molds, and then baking or curing in a closed oven.

A close parallel might be drawn between the processing of Air-Foam, and the baking of a cake. Both have the fluffy airy texture obtained by similar process of beating air bubbles into the dough. Both are given final shape by being poured into molds and oven baked or cured; and both must be handled very carefully to avoid jarring, with consequent settling, during the period while taking its molded shape.

Factors Behind System Development

A number of factors, important to the proper handling of the material during its preparation and in its uncured state, brought about the development and installation of a special handling system designed and built by Mechanical Handling System, Inc., Detroit, Michigan. Among these factors appear the following:

(a) The necessity for production precision in the timing of the mixing process, and the pouring into molds of the mix after its proper preparation.

(b) The closing of the mold within the few minutes after pouring, before the mix takes a final stiffness of texture.

(c) Gentleness but firmness in closing the mold.

(d) Smooth, vibration free handling of the filled molds until they are deposited in the oven for curing.

(e) Controlled temperature in the curing oven.

The major parts of this system for handling Air-Foam are as follows, listed in the order in which they are used, during a complete cycle of a mold: (1) Molds and Pallets; (2) Mixing Merry-Go-Round; (3) Pouring Conveyor; (4) Elevator; (5) Transfer Car; (6) Curing Oven; (7) Lowerator; (8) Stripping Conveyor; and (9) Cross Conveyor. A schematic layout showing the general functioning of the overall system is given in Figure 1.

The process begins at the mixing merry-go-round, a slowly rotating table on which is mounted a number of motor-driven mixers. Into these mixers a measured amount of the raw material and associated ingredients is poured, and is then properly mixed or beaten. The timing is such, that just as the mix has been properly agitated, it is delivered by the merry-go-round to the pouring position of the "pouring conveyor." Here the mix is poured into properly shaped molds which will form it to the desired shape of the final product.

Each of the molds is mounted on a small flat car known as a pallet. The pallet is arranged with flanged, ball-bearing casters to provide for smooth movement along the tracks on the conveyors and on other parts of the system.

The "pouring conveyor" consists of long, carefully assembled tracks with an endless chain running between them. Dogs spaced at intervals on the chain catch the under carriage of the pallets and propel them along the track to the curing end of the system. The "stripping conveyor" is of the same design and runs parallel to the pouring conveyor, and functions to return the pallets and molds from the curing ovens. The two conveyors are driven from one 7½ hp. type cs squirrel cage induction motor of splash-proof construction, and with a double extended shaft to provide for mounting of a magnetic brake. In production operation the conveyors operate continuously. When, for any reason, the system is to be stopped, quick, smooth retardation is obtained by direct current dynamic braking, and as a low speed is reached the magnetic brake, operating on the motor shaft extension, functions to provide a positive holding action.

After the pallets leave the pouring position the lids of the molds are slowly lowered and gently but firmly seated in the full closed position. Reaching the end of the pouring conveyor the pallets are transferred onto the elevator. The elevator is an ingenious device for stacking the pallets in tiers, of two per tier, preparatory to transferring them to the curing oven. The elevator is comprised of two endless chain systems, operating in tandem in a vertical direction. Each tier section has horizontal tracks upon which the pallets run as they leave the pouring conveyor. The vertical spacing between tiers is just sufficient to give clearance to the pallets. As each tier is filled with pallets the elevator chain system automatically rotates upward one tier height, making space for the next tier of pallets. This action progresses until the desired number of tiers have been filled with pallets.

Intricate Control System Required

The required delicate handling of Air-Foam necessitated a very complete and rather intricate control system which provides for extreme accuracy in lining up the tracks on the elevator with those on the conveyor, thus permitting a smooth jarless transfer of the pallets from the conveyor onto the elevator. A system

[1] Westinghouse Electric & Manufacturing Co., Cincinnati, Ohio.
[2] Manager, Electrical Engineering, Goodyear Tire & Rubber Co., Akron, Ohio.

of inter-locking control properly coordinates the timing of the pallet transfer, and the movement or rise of the elevator.

A 15 hp. type FD squirrel cage induction gearmotor of splash-proof construction is used to drive the chain system of the elevator. Direct current dynamic braking provides for quick smooth retardation of the elevator lift, and the magnetic brake operating on the motor shaft extension goes into action as the motor reaches a slow speed and provides an accurate and positive stop plus the necessary holding action.

The operation of the elevator progresses until the desired number of tiers have been filled with pallets. The "transfer car" will then deliver the pallets from the elevator to the curing ovens. The "transfer car" is a special vehicle running on a track transverse to the direction of travel of the "pouring conveyor." Arranged on the "transfer car" is a moveable "cage" or cross car which holds the pallets received from the elevator. The "cage" operates along tracks which run across the transfer car. The pallets are eased from the elevator onto the transfer car by what is termed the "elevator pusher." This "pusher" is operated by a 1½ hp. type FD 2-speed, 2-winding squirrel cage induction gearmotor. The slow motor speed is used when the "pusher" is moving pallets on to the "transfer car", but as soon as the transfer is completed the motor connections are shifted to high speed to provide for a fast return of the "pusher." Quick braking action is here again obtained by means of dc dynamic braking, and a positive hold is provided by a magnetic brake operating on the motor shaft extension.

The track along which the "transfer car" operates is long enough to serve several curing ovens, which are placed side by side in the space adjacent to the transfer car runway. Referring to Figure 2, the transfer car is seen in the center. To the left is the elevator, and the tiers of pallets may be seen being moved from the cage of the transfer car into the open oven on the right.

The requirements of the transfer car portion of the equipment are very exacting. Due to the need for smooth transportation of the uncured Air-Foam, acceleration and deceleration must be free from excessive jolts or jars, as has been previously stressed. The position of the car when stopped for the transfer of pallets to or from the "elevator," the "lowerator," or the ovens, must be meticulously exact, in order to make the various tracks line up. Furthermore, all requirements must be attained with a maximum speed and dispatch requiring a minimum of effort and attention by the operator who rides on the transfer car, and is provided with push-button control for all the various motions associated with its loading, shifting, and unloading.

To meet these exacting conditions, adjustable voltage direct current was chosen as a motive power and this is provided by a motor generator set mounted on the transfer car. Referring again to Figure 2, the unit frame motor generator set may be noted mounted at the left end of the car. The 10 hp. direct current shunt wound motor driving the car through a speed reducer may be seen on the right front end. Mounted directly above and to the right of the MG set is the direct current shunt wound motor used to drive the movable "cage" or cross car. A magnetic brake may be seen mounted on the motor shaft extension.

Power is fed to the transfer car from an alternating current system through long flexible conductors which are carried on reels on the car. The cable reels may be noted mounted directly above the main drive motor. The control equipment enclosed in two steel cabinets is located on the other side of the transfer car as shown in Figure 3.

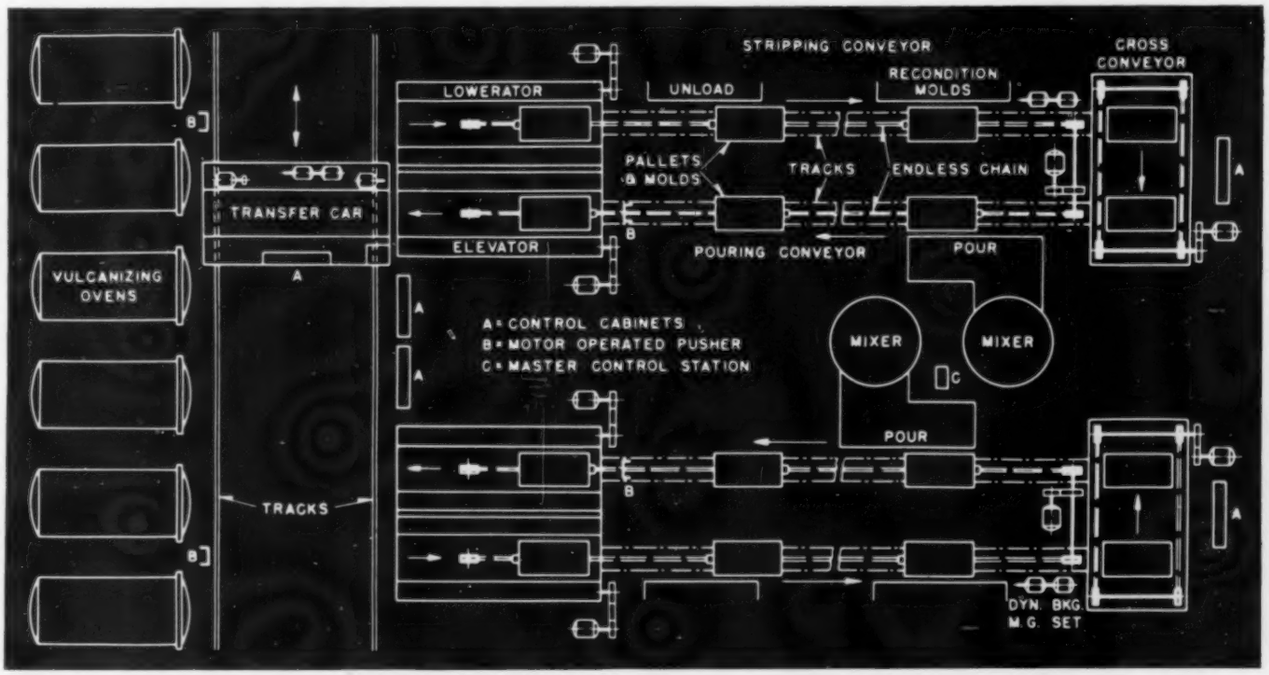

FIG. 1—Schematic layout and material flow chart. Note that the complete installation utilizes two duplicate conveying systems, elevators and lowerators, and transfer cars.

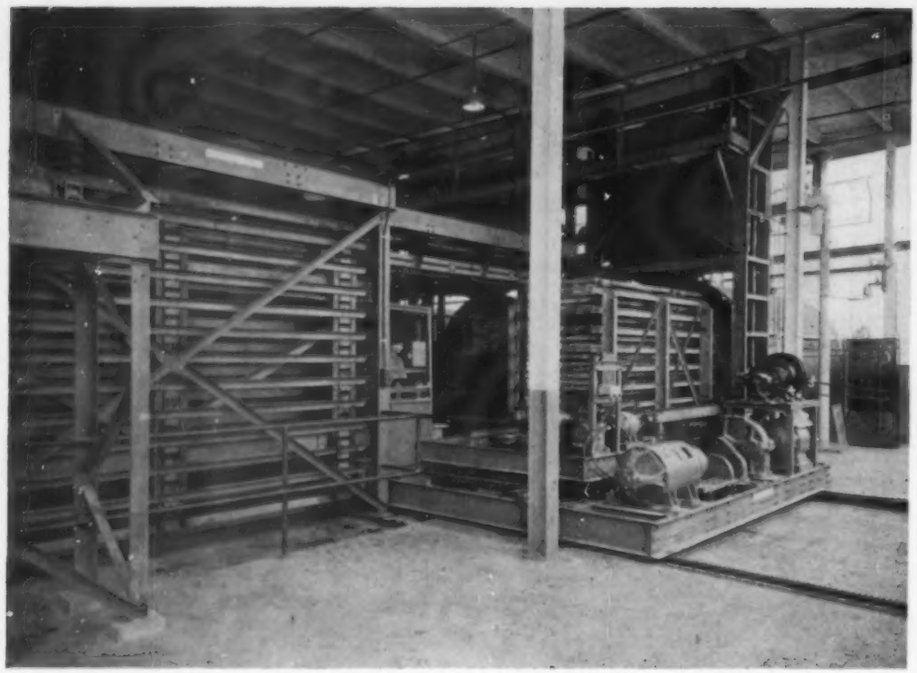

FIG. 2—The molds are taken from the elevator at the left onto the transfer car which delivers them to the curing oven at the right.

In order to secure permanent accuracy of limit switch settings, and to avoid the possibility of changing slow down or stopping points due to the slipping of wheels on the running tracks, the car is propelled by a system of gears engaging long racks placed on the floor adjacent to the rails on which the flanged car wheels run.

A travelling nut limit switch is driven from this system of gears, and serves as a setup for direction of motion, in response to the push-button selector manipulated by the operator. The speed of car travel, its acceleration, retardation, and final stopping, are controlled by knocker type limit switches mounted beneath the floor of the car, and operated by long cams, clamped to the floor at the correct locations. However, for long travel, acceleration is controlled, in addition, by time delay relays—assuring that the car is brought up to maximum speed in the minimum length of time, consistent with safety to the uncured material in the molds. Retardation and final stop are always by limit switch action. The motion of the cage in its travel on to or off of the car is controlled by another travelling

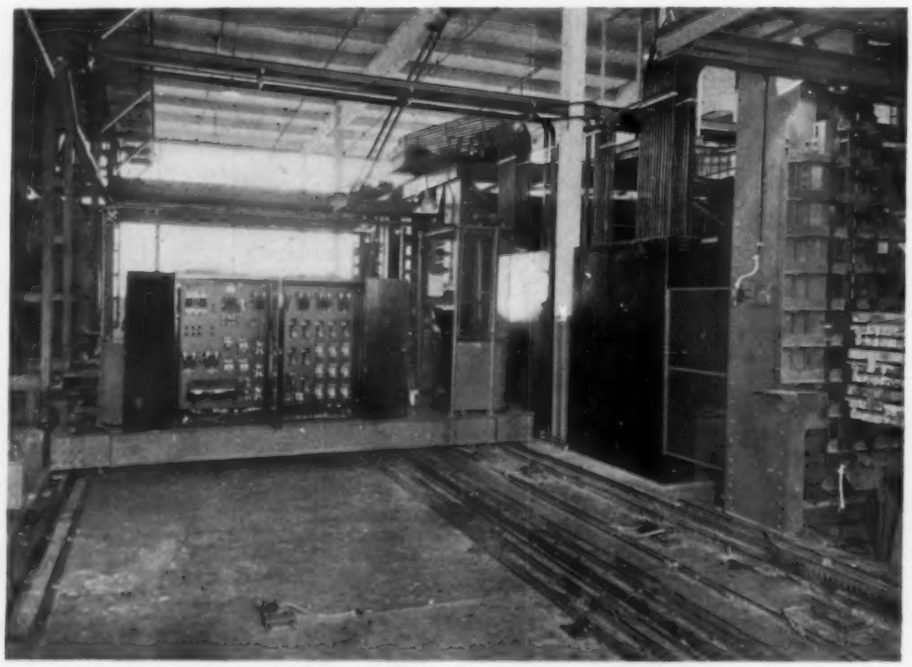

FIG. 3—View of the transfer car showing "Rototrol" mounted on control cabinet, in center, and operator's cab on the right.

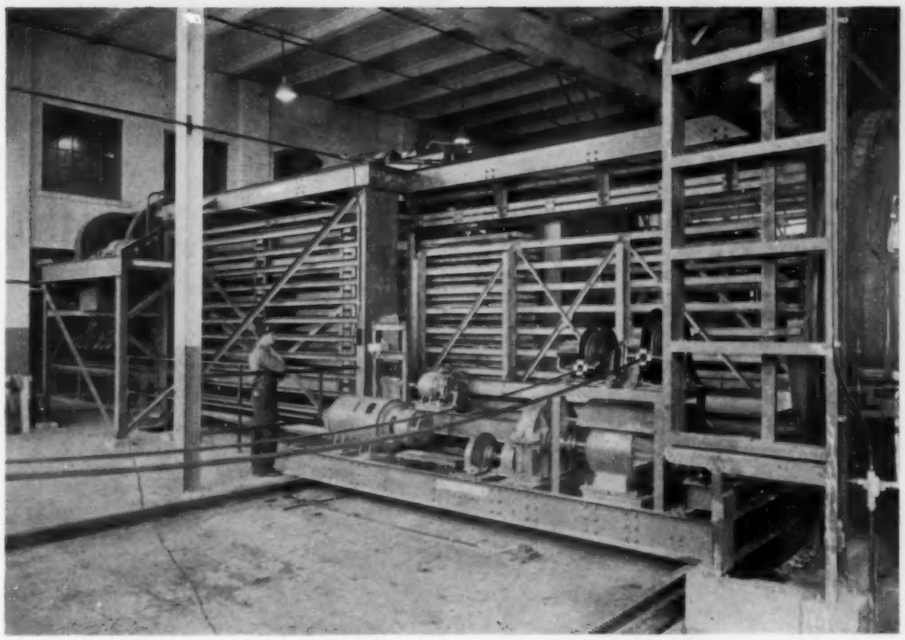

FIG. 4—The curing now complete, the molds are taken from the oven at the right onto the transfer car which delivers them to the lowerator at the left. Note pusher moving pallets from car to lowerator.

nut limit switch, which determines the acceleration, retardation, and final stopping at either end of the cage travel.

Inaccuracies of stopping, due to various friction or loading conditions, track obstacles, lubrication, or other factors which vary the amount of friction in the transfer car movements cannot be tolerated. Therefore, a "Rototrol" (special rotating type of regulator) is arranged to act on the generator field to provide definite voltages at various limit switch positions, and to provide automatic adjustment for any variation in load conditions. Thus, regardless of load or friction conditions, the proper voltage is always applied to the motor to maintain a definite slow speed from which the car may be brought to an accurate stop.

The moveable "cage" previously mentioned is driven by a dc motor operating from the same adjustable voltage MG set as used for supplying the "transfer car." It is not possible to operate the "transfer car" and its cage simultaneously, special interlocking control being provided to prevent damage from inadvertent attempts to secure motions of both car and cage at same time.

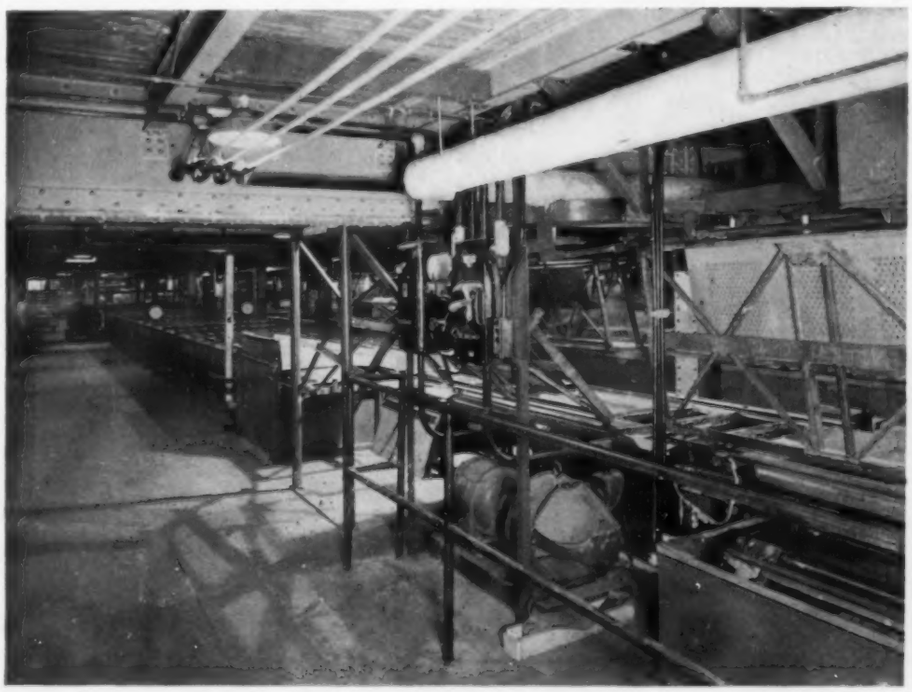

FIG. 5—The open molds carried on pallets move along the stripping conveyor. Note the chamber at the left through which the molds pass for reconditioning. A mold with its lid raised may be seen at the right end.

To move the "transfer car," the operator merely presses a button marked with the identification of the destination desired. Upon pressing the proper button, the car starts slowly, accelerates, travels the desired distance, retards, and smoothly stops at exactly the spot designated. He then presses another button, and the cage is loaded or unloaded as required. The pressing of still another button will move the car to a new position where again push-button action directs the loading or unloading.

Extensive interlocking control of the various motions of the car and the pusher is assurance that damage cannot result to any of the mechanism, due to accidental or inadvertent operation of the various selector buttons. As an example, it is not possible to move the pushers into or out of the cage unless the car is exactly positioned at the required spot for proper loading or unloading. As long as the pushers are in a position where they would interfere with car movement, it is not possible to move the "transfer car." It is not possible to attempt to unload a cage into an oven unless the oven door is open. It is not possible to move the "transfer car" unless the portion of the cage platen, which carries the cage into the oven, is in its fully retracted position.

It is possible for the operator on the car to signal to the operators of the main conveyors and if necessary to stop the movement of the conveyors and the associated portion of the equipment in case there is difficulty in the elevator or "lowerator." Figure 4 shows the pallets being moved from the "transfer car" into the "lowerator." The "lowerator" unit is similar to the elevator; the difference being, as the name implies, that the "lowerator" functions to lower the pallets onto the return or "stripper" conveyor. Here again, as in the case of the elevator, extreme accuracy is required in lining up the tracks so as to enable a smooth transfer of the pallets from the "lowerator" to the conveyors.

The "stripping conveyor," as previously described, is similar in construction to the "pouring conveyor," and one motor drives both conveyors. As the pallets move away from the "lowerator," the lids of the molds automatically are lifted, and the cured Air-Foam is then removed manually. The pallets proceed through a chamber where the molds are reconditioned to receive a new pouring of latex mix.

Figure 5 shows the molds carried on pallets being moved along the "stripping conveyor." At the left may be seen the chamber through which the molds pass for reconditioning. Beneath the conveyor is shown the motor generator set which provides direct current for dynamic braking of the alternating current motors previously described. At the right end may be seen a mold with its lid raised. This mold is being transferred from the "stripping conveyor" onto the "cross conveyor."

The "cross conveyor" runs transverse to the "stripping" and "pouring" conveyors and serves to move the pallets from one to the other. The operation of this conveyor is intermittent; with the conveyor at rest one pallet moves from the "stripper conveyor" onto this "cross conveyor," and at the other end a pallet is transferred from it onto the "pouring conveyor." After this transfer is completed the "cross conveyor" is started and moves the next pallet across into position for transfer to the "pouring conveyor," thus leaving a space at the other end for entrance of a pallet from the "stripping conveyor."

A 5 hp. type FD squirrel cage induction gearmotor of splash-proof construction drives this "cross conveyor." Rapid slow down is obtained by dc dynamic braking, and when low speed is reached a magnetic brake arranged on the motor shaft extension functions to provide an accurate stop. Special interlocking control coordinates the operation of the "cross conveyor" with the main conveyor system, assuring smooth positive operation.

When a pallet has been transferred from the "cross conveyor" onto the "pouring conveyor," it is moved past the pouring position where it is again filled with a latex mix from whence it proceeds through the various handling operations described.

Rubberless Non-Inflammable Cement

A NEW type of rubberless, odorless, non-inflammable cement, which will not evaporate, was recently introduced under the name of "Metrotex" by the Metrotex Products Co., 236 West 26th St., New York City. Two grades of the new cement have been developed, one for the leather and shoe trade and the other for the fur industry. The grade for the leather trade, somewhat heavier than the other, is applied in the ordinary manner, that is, after application it must be left until it becomes tacky.

In applying Metrotex to furs, the manufacturer emphasizes the point that it must be applied evenly over the nailed body and not rubbed in, since too thick a coating, or rubbing it in, will result in slight stiffness. Only a thin layer is required. Rubber cement when applied to fur has to be rubbed in firmly. The requirement of a thin layer only is due to the fact that Metrotex comes in a more liquid form than does rubber cement. Due to its liquid form, Metrotex allows more coats to the gallon. Although garments coated with the new cement dry within a few hours, best results are obtained by allowing them to remain over night.

Importance of Synthetic Latices

(Continued from Page 127)

natural latex and to meet certain new and more exacting specifications. Furthermore, their use may help alleviate the feared dry polymer equipment bottleneck.

Neoprene Latex Type 571 is more alkaline than natural latex and should be handled in suitable containers. Materials may be mixed into the latex in a manner similar to that used for rubber latex. However, the types of added materials necessary to produce good vulcanizates are slightly different. Dipped, sprayed, coated, impregnated, or molded articles may be made from Neoprene Latex Type 571 compounds. Articles having various physical properties emphasized may be made by proper compounding.

ACKNOWLEDGMENTS

In preparing this paper free use has been made of the publications of the E. I. du Pont de Nemours & Company, Inc., Rubber Chemicals Division, and of unpublished data available in the du Pont Rubber Laboratory.

Vulcanization or Other Heat Treatment by Electrical Conduction

By FELIX L. YERZLEY

THIS communication relates to the heating of plastic materials of a semi-conducting nature by passing electricity through them. In particular, it relates to the vulcanization of rubber and rubber-like materials, including neoprene, with heat generated by the conduction of an electric current and, similarly, it relates to the heat treatment of thermosetting plastics by conduction of an electric current.

It is well known that all electrical conductors are heated to some extent by the passage of an electric current. This heating is a direct consequence of internal resistance. The effect so obtained is proportional to the electrical energy absorbed and is expressed by the equation: Power = I^2R in which I is the current in amperes between two points and R is the corresponding resistance in ohms. The unit of power is the watt.

Others have used electrical means of heating unvulcanized rubber, but the disclosures differ fundamentally from this proposal. For example, Neerlye in U. S. Patent No. 2,054,000, assigned to Den Norski Remfabric, coils a steel ribbon and an uncured rubber belt in a spiral and heats the coil by passing electricity through the steel. Newton, in U. S. Patent No. 1,906,-402, assigned to Goodrich, claims vulcanization by a beam of electrons from a cathode ray tube. The most significant disclosure in relation to this proposal is British Patent No. 472,671, issued to R. A. Dufour. This claims the "process for the vulcanization of rubber characterized by the feature that the rubber to be heat treated is arranged as a dielectric between the electrodes of an electric condenser to which there is applied a high frequency alternating current of a periodicity of several million cycles per second." This patent is characterized by utilization of high frequency fields of the order of several megacycles per second. Further, it is not required in induction curing with high frequency current that the electrodes be in actual mechanical contact with the rubber. Induction curing is facilitated when the material to be heated has both high power factor and high dielectric constant but high

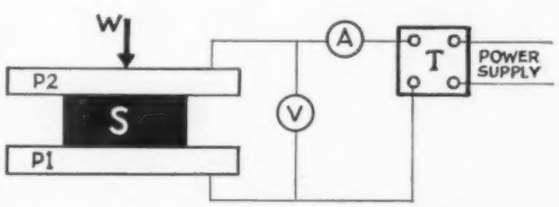

FIG. 1

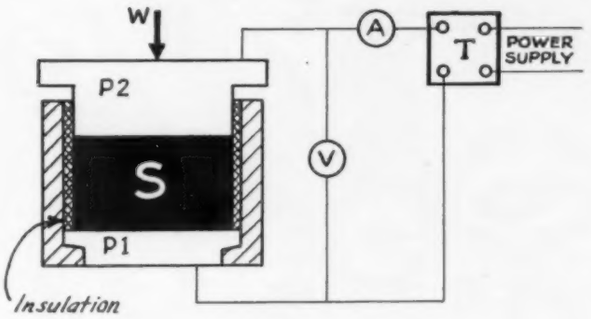

FIG. 2

electrical conductivity of appreciable amount is not essential to the application of the method.

In this process, high conductivity is required, the electrodes must be in actual mechanical and electrical contact with unvulcanized material and either direct current or alternating current, preferably 60 cycles or other common low frequency current can be used. Furthermore, vulcanization by induction is not readily adaptable to mold cures, whereas vulcanization by conduction is readily adaptable to cures in molds under pressure.

It has been found in recent years that rubber, which is normally considered an insulator, can be rendered conducting or semi-conducting by incorporating carbon black or other special materials in the composition. By this method of compounding, the resistivity of rubber can be reduced from the order of 10^{15} ohm cm. to 10^2 ohm cm. or less. As the resistivity decreases it becomes increasingly possible to heat blocks of rubber by applying a moderate potential to two points or surfaces. The resultant current generates heat after the manner described in the previous paragraph. Such conductivity is characteristic of a given composition both in the vulcanized and unvulcanized state. Under the latter condition the heat generated by electrical means will tend to cause vulcanization. If the temperature obtained by this means is sufficiently high and is maintained for a sufficient time, complete vulcanization will result. The following is one of the possible conducting compositions of neoprene:

Neoprene Type GN	100.0
Latac	0.3
Neozone A	1.0
Extra Light Calcined Magnesia	7.0
Acetylene Black	50.0
Process Oil	1.0
Zinc Oxide	2.0

It has been found that a composition of the foregoing type can be vulcanized without difficulty in 10 to 20 minutes if sufficient electrical power is supplied. The power requirement will depend upon the shape and size of the sample to be vulcanized but in experiments thus far it has been found that power of 20 to 40 watts per cubic inch can be employed. An elementary set-up to illustrate this method of vulcanization is given in Figure 1. The vulcanized sample "S" is held between two platens "P1" and "P2" by the force "W". Voltage across these platens is adjustable by means of the autotransformer or potential divider "T" and the power supplied is determined by multiplying together the readings obtained from the voltmeter "V" and the ammeter "A".

Figure 2 illustrates the logical extension of this system to vulcanization of rubber under pressure in a mold. The symbols in Figure 2 have the same significance as the symbols of Figure 1. In order that vulcanization in a mold shall be effective, the passage of the current through the sample must be evenly distributed. To do this it is necessary that there be no possibility of shorting the current around the sample. For example, in vulcanizing a cylinder by this method it would be necessary to insulate the inside cylindrical surface of the mold. The potential would then be applied between the cover and the bottom of the cylinder. This can either be done by constructing a mold with insulating walls or else wrapping the outside surface of the blank with an insulator,—paper for example.

More complicated shapes might require a very special mold construction and design of the part to be adaptable to this type of curing. However, a large proportion of mechanical goods is relatively simple in geometrical design and is readily adaptable to the curing system described.

This system of vulcanization differs in a basic way from curing methods now employed. It is apparent, from the description, that heating by electrical conduction will produce the highest temperature at the innermost points of the specimen being cured. The temperature rise, therefore, will occur most rapidly at the center and the temperature gradient will be from the inside out. In normal methods of cure the mold is heated and the specimen is vulcanized by conduction of heat from the outside in. As a result of this it is frequently difficult to obtain uniform cures throughout the mass, particularly if the cures are short or the specimens are large.

Whereas, customary methods of curing vulcanize from the outside in so that the inner portions are relatively undercured, the proposed method will vulcanize from the inside out leaving the boundary regions relatively undercured. It is known that overcured rubber will not resist fatigue and cracking caused by flexing as effectively as rubber given a normal cure or under cure. For this reason a secondary advantage of conduction curing is a more favorable surface condition for resistance to fatigue and flex cracking. A further advantage of heating from the inside out, as in conduction curing, is that back rinding at the closure of the mold is reduced, thereby producing superior articles and greater economy of production.

A high degree of uniformity in a cure should be obtained by combining the proposed method of vulcanization with present conventional methods. Molded goods, as a class, are expensive. A large part of this expense is due to the time required for vulcanization. Vulcanization by conventional methods must permit adequate time for the temperature to become reasonably uniform throughout the volume of the sample. It is not practical, therefore, to shorten the length of time, to any great extent, by using high mold temperatures since this procedure would accentuate the difference between the surface cure and the internal cure of the specimens.

However, by combining the proposed method with the conventional method, the internal temperature of specimens can be brought up to the mold temperature rapidly. It is therefore possible that much higher mold temperatures can be used and that great economies in the time of vulcanization can be effected. This proposal also tends to make practical the vulcanization of much larger objects from rubber than has heretofore been considered practical.

When this method is employed in combination with conventional curing it will not be necessary in most cases to maintain electrical power after the inside of the specimen has attained the required temperature. This makes it practical to employ this method of heating at an early stage in a cure in order to bring the volume of the specimen up to the uniform temperature and to rely, thereafter, upon auxiliary equipment to maintain this temperature over the required length of time.

In the foregoing, ideal conditions have been assumed for illustrative purposes. In many actual cases, however, it will be found that curing by conduction is unstable, and that non-uniform cures may result due to non-uniform distribution of current through the volume of the material being heat treated. This can occur quite readily if one portion of the volume becomes hotter than surrounding regions. In this case the hotter portion will require lower volume resistivity due to the temperature coefficient of resistivity. The current density will increase accordingly, greater heating will result, and the local temperature rise will rapidly accelerate out of control. This tendency can be counteracted by incorporation of a ballast phase in the composition. This would consist of a material, electrically conducting at elevated temperatures, and of such physical form as to migrate down a temperature gradient.

Under conditions of non-uniform temperature distribution the ballast phase would diffuse from the hotter regions to cooler regions at a rate dependent upon the temperature gradient. The reduction in the concentration of the ballast phase in the hotter regions would reduce the conductivity and the temperature. On the other hand, addition of the ballast phase to cooler regions will increase their conductivity and, as a consequence, their temperatures. Migration of a solvent has been demonstrated in experiments with toluene. Other substances will show similar diffusion.

ACKNOWLEDGMENT

The foregoing was prepared as a confidential memorandum for the Rubber Chemicals Division, E. I. du Pont De Nemours & Co., Inc. The principles of the method were confirmed by a few tests in the Rubber Laboratory but practical development has not been attempted. The author is pleased to acknowledge release of the report by the du Pont Company for publication. Jointly with them he expresses the hope that practical work may develop in the future to realize the advantages that seem to be promised.

NUMBER **FOUR** OF A SERIES OF ARTICLES ON

Better Management for the Rubber Factory

IV—PROFIT AND LOSS

By ARTHUR ROBERTS

THERE is a dangerous tendency in times like these when business is booming to be lax with expenses, to let them soar unchecked. You know, "Easy come, easy go". The monthly analysis of the profit and loss statement will keep this tendency in check. Yet, too few rubber factory managements do more than take a hurried look-see at the profit and loss statement, a rapid eye-sweep that focuses for a moment on sales and then skims downward to net profit.

The management that veers from this routine is an exception, particularly in the small and moderately sized plants, because the majority are concerned with only one figure on the profit and loss statement, the net result, profit and loss. If black, it satisfies; if red, it strikes a blue note and the attitude is one of resignation or condemnation against anything that may have affected profits adversely, from a price-cutting war to an obsolete system of cementing parts on waterproof footwear, hand operations instead of top cementing machines, which kept production costs in high and profits in low.

But, usually, nothing further is done about the inadequate return on sales. This is definitely not good business management and the rubber manufacturer following this routine should apply correctives immediately because those who ride the crest safely today must be tops in managerial efficiency and know all the answers, knowledge that can come only through the closest attention to all details of operation.

Careful Analysis is Essential

A careful analysis of the profit and loss statement monthly is more important today than ever before. With prices on the up, production schedules interrupted by withdrawals of employees for the draft, with taxes heading skyward and the likelihood of governmental action anent ceilings on prices or profits, the rubber manufacturers cannot afford to take chances on their position at this critical period any more than the captain of a ship can sail the storm without close application to the instruments of navigation.

Yet, we find from our field studies in connection with the articles we have written for RUBBER AGE during the past two years, that despite the necessity of keeping all operations in sharp focus today, only 20 per cent of the rubber factories contacted prepared a profit and loss statement monthly, 30 per cent prepared statements quarterly, 40 per cent semi-annually and 10 per cent prepared them only annually. Taking them all in all, only 25 per cent analyze their profit and loss statements properly after they get them, Even if you have a statement prepared monthly, it will do little good to only glance at the result and file away. The statement should be analyzed intelligently with full attention given to every detail.

Examples of Poor Analysis

The profit and loss statement is like a 6-cylinder automobile engine: sales, direct production costs, inventories, gross margin or profit, operating expenses, burden or overhead and net profit are the 6 cylinders making up the rubber factory's business engine. One bad cylinder ruins engine performance even if the other cylinders are in good condition. Likewise with the component parts of a profit and loss statement. One bad cylinder can make the entire business run ragged and unless you keep a close check on the ensemble every month, you will never know when the system will get out of line and back-fire with serious results, particularly at a time like the present.

One rubber factory using modern machinery reviewed in our field work showed a decrease from 7 per cent for the first half of 1940 to 3 per cent for the last half. Increasing costs on wages and raw materials were blamed off-hand with no further attempt by the management to probe for the real cause, which was a "bottle-neck" caused by obsolete cutters, unable to keep pace with the extruded stock delivered by speedy, modern extruders. The cutters couldn't take the load delivered by the more up-to-date equipment.

Because of "all-out" production demands, costly "bottle-necks" are becoming increasingly numerous in rubber factories. We know of plants that never knew a "bottle-neck" until the past year and now such hold-ups plague them often. Why? Under normal conditions, the machinery in these factories had been able

to take production in its stride but as capacity became strained, the "bugs" began to show and up went production costs. A casual glance at the profit or the sales figures will not disclose defects in operation due to obsolete equipment or any of the other many causes that can keep costs up and profits down in a rubber factory. A critical analysis, more meticulous now than ever before, is needed to trail defects to their lair.

Importance of Auxiliary Records

Auxiliary records are of utmost importance. Less than 25 per cent of the plants in this industry supplement their bookkeeping figures with performance charts on individual machines detailing production efficiency, "time out" per machine for breakdowns, the wearing qualities of parts, upkeep cost, and the like. This requires the cooperation of the production manager and one difficulty retarding a dependable analysis of the profit and loss statement monthly is the indifference of some business managements toward cooperation with the production department in studying production costs and burden.

Too many rubber factory managements, especially the small and moderately sized, are not making mechanical and production executives conscious of the importance of keeping a close check on machine performance so that comparative studies are obtainable covering machine-hour costs and man-hour costs to aid in analyzing the results on the profit and loss statement. Rubber factory "front-office" men are too prone to think in terms of sales, gross profit and net profit and too indifferent about digging behind these totals to find out the reasons why they are high or low.

Frequently, a substantial profit lulls a management into a state of false security. For example, the general manager of one rubber factory told us recently, "We made 11.2 per cent net profit on sales for the first quarter in 1941, so we don't have to worry. We're keeping our costs under control". He was the typical one-figure man. All that interested him on a profit and loss statement was the profit or loss. But, in checking behind the figures, we found that the accounting department was figuring depreciation semi-annually and had excluded this expense for the first quarter. An adjusting entry disclosed that the first quarter, despite a big increase in sales volume, showed a net of only 3.8 per cent—less than in 1939 and 1940 when sales were substantially lower.

If our experience is any criterion, 80 per cent of the small and moderately sized rubber factories do not do a good enough job of distributing overhead expense or factory burden. Even with the swollen business of today, this puts a plant on mighty thin ice insofar as profits are concerned. Usually, such factories allocate production costs properly but do not pro-rate selling expense to the various products sold; thus, being unable to determine true profit on individual lines, they may pro-rate direct costs to each department but not indirect costs. Sometimes they charge only labor and materials to the department, lumping other costs, direct and indirect, in general factory burden or overhead; other plants apportion burden according to the percentage of direct labor.

We have known cases where costs have been distributed by one method during one period and by another method for another period. Be consistent in the recording of cost data and the preparation of all statements so that comparative profit and loss studies, which are of such great importance to the rubber manufacturer today, can be made readily.

Adequate distribution of costs and burden analyzed monthly will disclose the soft spots in production. In one plant, the statements showed a net profit of 6.1 per cent for the first half of 1939 and 4.8 per cent for the first half of 1940, which experienced a sales increase of 20 per cent, in round figures. A case of the bigger the volume the less the profit, and a surety these days in many rubber factories unless costs are kept under more rigid control by means of minute profit and loss statement analysis monthly, budgetary programs, precise distribution costs, etc.

Why this drop in profits with increased sales? This management banked too much on an automatic increase in profit with the sales increase and kept inadequate distribution of costs. A check-back over the records for the first half of 1940 disclosed what should have been known months before, that the labor cost per 100 pounds of processed stock was far too high because of mill obsolescence. When this information was brought to the management, they installed a modern sheeting mill, mixer and tuber; labor costs dropped to 1/3 of former figures, despite an increased wage rate. Profits for the second half of 1940 jumped to 8.3 per cent as a direct result.

This case history is typical of others reviewed in our research work for RUBBER AGE, where a plant, as a whole, is showing profits but one or more "dead cat" departments are throttling results with excessive operating costs. Our survey work sheets have chronicled too many rubber factories using obsolete and inadequate mills, presses, controls, etc., and because the managements do not analyze their figures minutely, they do not realize the big drag that this equipment puts on profits, a bigger drag, incidentally, when sales are at peak than when they are traveling at a slower pace. This is a basic condition in all factories.

Peak production is seldom as profitable as practical production or practical capacity, which, we estimate, is around 85 per cent of full capacity in the rubber industry. When machines are operated day and night, they depreciate faster; labor and inspection under the strain of peak output do not do their best; raw recruits are put on the jobs that only trained men formerly handled; mill schedules jam frequently and confusion is more likely to arise; breakdowns are more costly; and, all in all, unless greater care is taken in analyzing the results of operation, profits may go "boom" with the boom. Granted that there is difficulty getting delivery of some equipment today, there is no excuse for laxity in the analysis of operating results so that the true condition is known and ameliorated temporarily until adequate and modern units are obtainable.

No Yardstick for Rubber Industry

There are no yardsticks against which you can check your production costs or burden to determine whether you are operating in the safety zone. In some industries, composite figures for similar plants may be used as guides, but our studies indicate that this cannot be done in the rubber industry with any hope of great accuracy. Even plants with similar operating set-ups

and sales may find that their profits differ widely. Usually, the condition of the equipment has much to do with the variation. This means that the rubber manufacturer must depend upon his own experience and judgment to determine the fitness of each item listed on the profit and loss statement, knowledge and understanding that can come only through careful, competent, consistent perusal of the figures covering production and overhead.

When comparing statements, check trends—upward or downward. If sales have been down-sliding for a period, it is a signal to overhaul your business routine or processing machinery, even though you are still making a profit. When statements are checked monthly, it is much easier to remedy a deflection in sales because steps can be taken immediately to adjust the condition. The same holds true if production cost or burden is out of line with past performance. If analysis is only casual, or if the statements are prepared too infrequently, a detrimental trend may continue unchecked and eventually bring the sheriff. In appraising the sales figure in normal times, consider the business trend in your community and general business conditions. If volume outside your organization is in low gear, your sales may be likewise, but you can offset the deficiency and sometimes increase your volume at such a time by analyzing the profit and loss statement monthly, watching direct production cost, factory burden and administrative overhead with an eagle eye.

We know of rubber factory managements that increased volume and profit in hard times because they analyzed every operation of business and went to town on sales promotion while the majority of their confreres just sat around and waited for business to pick up. The most successful business men are realistic. Easy selling does not lull them into a sense of false security. They are always prepared for reverses. Business won't always be as easy to get as it is today. Let us hope that the transition from wartime abnormal to peacetime normal will be accomplished without headaches to this industry. We do know that those rubber manufacturers who analyze their figures with critical eye month after month will be in a preferred position to take the bumps in their stride.

Selling expense should be analyzed carefully to see that salesmen are earning their grits. Even today, selling expenses are high in many rubber factories. Better training of salesmen, better sales management, sales meetings, a bigger advertising appropriation and a different method of remunerating salesmen are some of the essentials needed to cut selling expenses in this industry. Compare overhead for the current period with similar periods for the preceding 3 to 5 years. Research discloses that, in the rubber industry, overhead expenses average up about right when computed for 3 to 5 years and you can safely use this yardstick to check current figures. Sometimes a difference is justified, of course, but you should check back for safety just the same. Investigate all big differences.

Margins must be watched more carefully than ever before, strange as it seems. That is because costs are unstable, tending to creep upward as defense appropriations expand, and, at the same time, your selling prices or profits on investment may be "ceilinged" by the government. This will narrow margins and make it all the more necessary to check costs closely. If operating expenses expand unduly and margins are restricted by governmental decree, you may lose instead of profit during the emergency, regardless of the size of your volume.

Anyhow there is considerable fallacious reasoning anent sales volume. Some managements assume that volume is the only goal to strive for, but practically all research experts contend that substantial net profits at any time are due more to the rigid control of expenses than to brilliant sales strategy. Of course, a concern, young in years, must make gradual growth annually, but after its period of adolescence, it comes to maturity when the annual sales are more or less rationalized—travel within a rather restricted area—and then the size of profits depends largely upon the efficiency of the management in keeping costs at minimum.

Illumination Recommendations for Rubber

THE illumination table shown below for rubber manufacturing operations is the result of recent findings and observations by the Westinghouse Lamp Division, Westinghouse Electric & Mfg. Co., Bloomfield, N. J. It is based on the scientific fact that existing foot-candle levels should be at least doubled if measurable and significant improvements in seeing are to result. In addition, the new recommendations give full weight to the improvements in old light sources, the high efficiencies of the new, and the ever downward trend of lighting costs as a result of all these improvements. The values shown should be provided on the work regardless of whether in a horizontal, vertical or oblique plane.

Activity	*Foot-Candles*
Rubber Tire and Tube Manufacturing:	
Stock Preparation—	
Plasticating, Milling and Banbury	20
Calendering	30
Fabric Preparation—Stock Curing and Bead Building	30
Tube and Tread Tubing Machines	20
Tire Building—	
Solid Tires	20
Pneumatic Tires	50
Curing Department—	
Tube and Casing	50
Final Inspection—	
Tube	50
Casing	100
Wrapping	20
Warehouse	5
Rubber Goods—Mechanical:	
Stock Preparation—	
Plasticating, Milling and Banbury	20
Calendering	30
Fabric Preparation—Stock Cutting and Hose Looms	30
Extruded Products	30
Molded Products and Curing	50
Inspection	100
Boxing	20
Warehouse	5

Abstracts of United States Patents on the Compounding and Use of Synthetic Rubber

By FREDERICK MARCHIONNA, M. S. Chem.

Part V

Kronquest et al—U. S. Pat. 2,119,280—May 31, 1938. *Can Sealing.* (Assigned to Continental Can Co., New York, N. Y.).

A sealing material for cans which is not affected by and in turn does not affect foods and beverages packed in the can is in the form of an aqueous dispersion of a polychloroprene composition comprising a polychloroprene (10), a jellified oil obtained by heating China wood oil with ⅛th of its weight of rapeseed oil at 600° F. until the gel forms (4), alkyd resin (4), ester gum (4), glue in solution (3), diatomaceous earth (84), titanium oxide (2), and bentonite (1). To form the dispersion which is poured in the channel of the can cover, the polychloroprene is milled at 212° to 250° F. and the oil gel added, followed with the powder fillers and the glue solution containing the bentonite. The ester gum and the alkyd resin are heated together at 400° F., placed in a heated mixer, and the polychloroprene mixture added gradually while agitating and mixing at 200° F. A solution of 5% ammonia is then worked in gradually until a reversal of phase occurs to obtain an aqueous dispersion of the solids in water which can be diluted with 5% ammonia.

Rapport—U. S. Pat. 2,119,491—May 31, 1938. *Dampening Roll.* (Assigned to Rapid Roller Co., Chicago, Ill.).

The surfacing layer of dampening rolls used in lithographic offset presses consists of a fine cellular rubber-like mass having a water-absorbent filler distributed through it. The rubber-like material may be natural rubber, polybutadiene, polychloroprene, etc., while the absorbent filler can be cotton flock, cork or wood powder, powdered sponge rubber, etc. The absorbent filler is admixed with the natural or synthetic rubber, with or without a blowing agent, and formed into a sheet which is wrapped around the metal roll. A plain or rubberized sheet is then wrapped around the roll and the roll vulcanized in steam or hot water. The roll is then ground to the specific diameter into an absorbent nap surface.

Wagner—U. S. Pat. 2,121,938—June 28, 1938. *Shoe Insole.* (Assigned to United Shoe Machinery Co., Boston, Mass.).

In a method of making insoles there is formed in the edge face of the insole blank an inside channel parallel to the surface of the insole. The central portion of a tape is folded over a core and the marginal portions of the tape are disposed in opposite directions and then cemented to the insole by means of a polychloroprene cement, with one edge of the core aligned with the bottom of the insole channel and then turning the channel flap and the inner marginal portion of the tape against the inner face of the folded portion of the tape.

McCormack—U. S. Pat. 2,122,378—June 28, 1938. *Refrigerator Seal* (Assigned to General Motors Corp., Dayton, Ohio).

A material particularly adapted as a seal between metal parts of a refrigerator comprises polychloroprene (100), magnesium oxide (10), zinc oxide (10), rosin (21), and carbon black or graphite (29). Such a sealing material will withstand immersion in hot oils and is not affected by difluorodichloromethane, tetrafluorodichloroethane, and similar refrigerants used in refrigerators.

Kuzmick et al—U. S. Pat. 2,122,691—July 5, 1938. *Abrasive Articles.* (Assigned to Raybestos-Manhattan, Inc., Passaic, N. J.).

An abrasive article, such as polishing or grinding wheels, is obtained by bonding the abrasive grains with a polychloroprene-synthetic resin binder, the synthetic resin preferably being a cresol-formaldehyde-tung oil condensate which is prepared by reacting cresol (100) with 40% formaldehyde (50) in the presence of sulfuric acid (0.25) in a reflux condenser for one and one-half hours, removing the separated aqueous layer, and heating the residue at 160° C. to obtain a clear, brittle resin which is heated with tung oil (100) until the desired viscosity is obtained. This resin (3) is then compounded with polychloroprene (10), zinc oxide (0.5), magnesium oxide (0.5), rosin (0.5), sulfur (0.1), and silicon carbide or alundum grains of the desired size, sheeted, and punched into wheels of the required diameter, and cured at 310° F. from one to five hours in a platen press to further polymerize and harden the mass. The quantity of synthetic resin may vary from 10 to 50% of the weight of the polychloroprene, and the binder mixture may be 9% of the quantity of abrasive grains.

Sager and Houston—U. S. Pat. 2,126,818—August 16, 1938. *Gas Impermeable Fabrics.*

A fabric which will be impermeable to hydrogen and helium gases used in airships is obtained by coating a cloth with an olefine polysulfide obtained by reacting an alkylene polyhalide, such as ethylene dichloride, with an alkali polysulfide. In one example, the coating material comprises the polyethylene polysulfide (100), zinc oxide (10), tetramethyl thiuram disulfide (0.2) dissolved in carbon disulfide (900), and chlorobenzene (100). A closely woven fabric, when coated with the above and cured at 264° F. for one hour in open steam to obtain a fabric weighing 5.6 ozs./sq. yd., will have a diffusion rate of 0.4 liter per square meter for 24 hours. In another example, a similar fabric when coated with a mixture of polysulfide plastic (100), smoked rubber (10), zinc oxide (10), carbon black (20), tetramethyl thiuram disulfide (0.25) dissolved in beta trichlorethane (1100), and cured as above into a fabric weighing 5.8 ozs./sq. yd., has a diffusion rate of 1.7 liter per square meter for 24 hours. In still another example, a balloon cloth is coated first with vulcanizable rubber cement, so as to leave on the fabric 0.6 ozs./sq. yd. of coating. An intermediate coating consisting of polyethylene polysulfide (100), natural smoked rubber (50), zinc oxide (10), and accelerator (0.25) dissolved in trichlorethylene (1800), is applied thereon and dried to form a layer weighing 0.8

ozs./sq. yd. A surface coating from a polysulfide plastic (100), zinc oxide (10), and accelerator (0.1), is applied and dried into a coating weighing 2.6 ozs./sq. yd., which is dried and cured.

Charch et al—U. S. Pat. 2,128,229—August 30, 1938. *Bonding Neoprene to Artificial Silk.* (Assigned to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware).

The bonding of natural rubber or polychloroprene rubber to viscose rayon or other natural or synthetic cellulosic fibre is effected by coating the fibres with a synthetic resin produced by reacting a polyphenol, *e.g.,* resorcinol, phloroglucinol, orcinol, etc., with formaldehyde, with or without a natural or polychloroprene latex, and then bonding the rubber thereto. Thus, a rayon cord is impregnated with an aqueous solution containing 2% of resorcinol, 1.2% of formaldehyde, 0.2% of sodium hydroxide, and 10% of polychloroprene rubber in the form of a latex. The cord is then dried at 187° F. or higher, laid upon a sheet of polychloroprene rubber in compounded form with sulfur, rosin, magnesium and zinc oxides, accelerator, etc., and subjected to heat and pressure to cure the article and bond the polychloroprene rubber firmly to the rayon. The quantity of polychloroprene rubber in the resin binder may vary from 5 to 40% and preferably between 8 to 20%.

Charch et al—U. S. Pat. 2,128,635—August 30, 1938. *Bonding Bases of Neoprene.* (Assigned to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware).

The phenol-aldehyde resin of U.S. Pat. 2,128,229 is used for bonding natural or synthetic rubber to zinc, aluminum, nickel, chromium, iron, lead, steel or alloys thereof, wood, paper, leather, glass, ceramics, etc. Thus, an aqueous dispersion containing resorcinol (2), 40% formaldehyde (4), sodium hydroxide (0.2), natural rubber in the form of vulcanizable normal or creamed latex (7.5), and polychloroprene rubber in the form of latex (7.5), is used for bonding a curable polychloroprene composition to any of the above bases by first coating the base with the aqueous binder, drying, and heat-pressing and curing the polychloroprene thereon. A rubber hose may be lined with a polychloroprene rubber by passing a quantity of the above resin-latex mixture to form a uniform coating therein. After drying at 60° to 100° C., a polychloroprene latex is passed through the hose to completely coat the inside of the hose which is dried and cured. Such a hose is particularly suitable for conducting hydrocarbon liquids.

Hurley—U. S. Pat. 2,134,946—November 1, 1938. *Radio Shielding.* (Assigned to Bendix Aviation Corp., South Bend, Indiana).

A radio shield for an electrical conductor comprises a braided wire tube, a covering of polychloroprene rubber extruded about the tube to surround it and fill the spaces between the wire strands, and a metallic spring within the wire tube engaging the inner wall thereof. A metallic ferrule extends into the tube interiorly of the spring, the ferrule having an external flange electrically connected with the wire tube. A suitable polychloroprene for covering the wire tube comprises a polychloroprene (100) compounded with zinc oxide (10), magnesium oxide (10), rosin (5), and a soft carbon black (40). The braided wire tube should preferably be of phosphor bronze flat braid surrounded by a second braided tube of smaller tinned copper wire.

Mitchell—U. S. Pat. 2,135,985—November 8, 1938. *Electric Cable.* (Assigned to Phelps Dodge Copper Co., New York, N. Y.).

An electric cable comprises a plurality of individual conductors, a layer of heat-resistant varnished cambric fabric wrapped around each conductor, a layer of electrical insulation around each wrapped conductor, and fillers between the conductors consisting of asbestos fibres saturated with a non-inflammable saturant. This assembly is encased in a sheath comprising a layer of heat-convertible "Harbeseal", an armor casing of braided aluminum alloy wire, and a paint coating. The heat-resistant cambric is obtained by saturating the fabric with a heat-converted polymerized beta-chloroprene and selenium powder. The "Harbeseal" casing is made from a composition comprising poly-beta-polychloroprene (30 to 60), rosin or chlorinated diphenyl, cumar resin, etc., as plasticizer (1 to 10), magnesium oxide (5 to 20), Neozone as antioxidant (3), and sufficient filler to bring the compound to 100%. To this is added an accelerator of heat conversion, *e.g.,* sulfur, selenium, tellurium, or zinc oxide (50), the weight of the compounding ingredients being calculated on the per cent of the polychloroprene and the latter as the per cent of the mixture.

Habgood—U. S. Pat. 2,137,686—November 22, 1938. *Bonding Natural Rubber to Polychloroprene.* (Assigned to Imperial Chemical Industries, Ltd., London, England).

Natural rubber is bonded to polychloroprene rubber by forming sheets of vulcanizable rubber and curable polychloroprene, treating the surfaces to be joined with an accelerator containing nitrogen and sulfur, joining the sheets thus treated, and subjecting the entire assembly to heat and pressure. The accelerator may be mercaptobenzothiazole, dithiocarbamates, thiuram disulfide, etc., or mixtures thereof, and may be applied by dusting the surfaces or dispersed and/or dissolved in a liquid carrier, such as benzene, petrolatum, etc., or even rubber. In one example, a vulcanizable tire tread of compounded natural rubber and a sheet containing polychloroprene (100), magnesium oxide (5), carbon black (35), stearic acid (4), sulfur (1), mercaptobenzothiazole (0.75), pine tar (3), zinc oxide (10), and antioxidant (1) are joined with an interposed rubber layer containing blanc fixe (75), sulfur (2), 2,4-dinitro phenyl benzothiazyl sulfide (2), zinc oxide (10), and rubber (100). The assembly is then heated in a press at 141° C. for 45 minutes. Instead of the intermediate bonding layer, the two sheets to be joined may be painted with a cement containing polychloroprene (10), zinc diethyl dithiocarbamate (10), and benzene (80); or they may be dusted with lead or cadmium piperidyl dithiocarbamate, zinc phenyl-ethyl dithiocarbamate, lead mercaptobenzothiazole, etc.

Ott—U. S. Pat. 2,138,192—November 29, 1938. *Polychloroprene Products.* (Assigned to Hercules Powder Co., Wilmington, Delaware).

A synthetic rubber composition resistant to the swelling action of gasoline and mineral oils comprises polychloroprene and a chlorinated paraffine wax containing sufficient chlorine to render it insoluble in gasoline. The following mixtures are given:

I—Polychloroprene (3 to 4) and chlorinated paraffine wax of 50% chlorine (1).

II—Polychloroprene (153), chlorinated paraffine wax of 54% chlorine (75), thermatomic carbon black (197), whiting (153), zinc oxide (15.3), pine tar (10.2), Cumar P-25 (10.2), rosin (10.2), calcined magnesia (15.3), sulfur (1.3), stearic acid (2.5), and phenyl-beta-naphthylamine (1.3).

III—Polychloroprene (287), chlorinated paraffine wax of 54% chlorine (140), thermatomic carbon black (369), whiting (287), zinc oxide (28.7), pine tar (19.1), Cumar P-25 (19.1), rosin (10.1), calcined magnesia (28.7), sulfur (2.4), stearic acid (4.8), and phenyl-beta-naphthylamine (2.4).

The above compositions may be cured at 250° to 300° F. from 20 minutes to 2 hours. Composition I can be dissolved in toluol or a similar solvent and used as cement.

Dales et al—U. S. Pat. 2,138,226—November 29, 1938. *Acid Latices.* (Assigned to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware).

Polychloroprene latex is rendered acid and stable by treating the latex obtained by polymerizing an aqueous emulsion of chloroprene with a quartenary ammonium or phosphonium compound or any other compound which is known to impart to dispersion a positive charge. It includes cetyl tri-ammonium bromide, cetyl trimethyl ammonium chloride, cetyl pyridinium bromide or chloride, stearyl pyridinium bromide, C-hexadecyl betaine, N-lauryl betaine, lauryl methyl glucamine, diethyl ethylene oleyl diamine hydrochloride, etc. Various examples are given describing the use of each type of stabilizer. In one

example, chloroprene (100) is emulsified in water in the presence of 3% of cetyl or lauryl trimethyl ammonium bromide, or 1.5% of cetyl pyridinium bromide, which should be in the form of aqueous solution and should be added in a small stream with agitation. The resulting emulsion, which has an acid reaction, is allowed to polymerize to obtain a polychloroprene acid latex which is very stable and can be admixed with natural latex, and used for making any desired articles. This latex is treated with 1.5% of eugenol to form a 33% polychloroprene latex containing 10% of the acid stabilizer. In another example, the polychloroprene is emulsified and polymerized as above by using 2% of aqueous diethyl ethylene oleyl diamine, or stearylamine hydrochloride, etc.

Wiezevich—U. S. Pat. 2,138,895—December 6, 1938. *Polybutadiene Mixtures.* (Assigned to Standard Oil Development Co., New York, N. Y.).

This patent is directed to and claims the use of polyisobutylene with natural rubber, but also claims that instead of natural rubber there can be used polybutadiene, polychloroprene rubber, etc. The polyisobutylene may be produced by polymerizing a mixture of isobutylene and chloroprene, butadiene, divinyl benzene, etc., in the presence of boron fluoride. The polymer or co-polymer in quantities from 1 to 95% may then be mixed with natural or synthetic rubber and used in the form of solution or aqueous dispersion for making dipped articles, rubberizing fabric, adhesive tapes, etc. Formulas are given in which the polyisobutylene may have a molecular weight from 1,000 up to 300,000.

Gray and Shealey—U. S. Pat. 2,140,672—December 20, 1938. *Sealed Connections.* (Assigned to Glenn L. Martin Co., Baltimore, Md.).

In the sealing of metallic joints, such as fuel tanks used in aircraft, or hull structures, sponson structures, windows, etc., a coating from a low viscosity Thiokol cement is applied to each of the opposed faces of the structural members to be butt-joined and sealed. After the cement has dried, a high viscosity Thiokol cement is applied and the pieces assembled with butt-joint in proper position and pressed together to seal the joint. The formulas of the cements are not given, but it is stated that they contain less than 10% rubber. Several seal constructions are illustrated.

Becker et al—U. S. Pat. 2,143,470—January 10, 1939. *Fire-Resistant Rubber.* (Assigned to I. G. Farbenindustrie, A. G., Germany).

A fireproof rubber product is obtained by admixing with the rubber a chlorinated naphthalene or chlorinated diphenyl and a high molecular weight chlorinated plastic material from the group consisting of chlorinated rubber, polyvinyl chloride, etc. Various examples are given. In one example, in which there is used a chlorinated polychloroprene, a mixture of chlorinated diphenyl (80), chlorinated polychloroprene (20) and crude rubber (100) is milled, after melting the two chlorinated plastics at 100° C., and Kieselguhr (80), zinc white (15), sulfur (35), antioxidant (1.5), and an accelerator mixture consisting of mercaptobenzothiazole, D.P.G., and hexamethylene tetramine (1) are incorporated therein. The mass is then vulcanized at 137° C. for one-half hour to obtain a highly elastic and soft, fireproof product.

Humphrey—U. S. Pat. 2,144,495—January 17, 1939. *Bonding Rubber to Metal.* (Assigned to Firestone Tire & Rubber Co., Akron, Ohio).

Rubber is bonded to metal or other bases by means of an intermediate bonding layer comprising natural rubber or a polychloroprene with a synthetic drying oil selected from the group consisting of poly-polymerized, mono and divinyl acetylene and their homologs. In the example given, a metal is cleaned and coated with a cement containing natural or polychloroprene rubber (74), sulfur (3), magnesium oxide (10), zinc oxide (10), and carbon black (8) in 500 parts of benzene, to which there is added 100 cc. of a 60% naphtha solution of a polyvinyl acetylene in the form of oil referred to as S.D.O., using 500 cc. of the rubber solution. After the metal base (which may be steel, zinc, aluminum, brass, etc.) has been coated with the cement composition described above and dried at 185° F. for 15 to 45 minutes to produce a tacky surface, it is again coated with the same cement, the second coat retarding any further polymerization of the polyvinyl acetylene, and then dried. A rubber sheet containing vulcanizing agents is then placed thereon and the assembly subjected to heat and pressure to vulcanize the rubber and bond it firmly to the metal.

Faucett—U. S. Pat. 2,147,402—February 14, 1939. *Electric Cable.* (Assigned to General Cable Corp., New York, N. Y.).

The insulated conductor used for transmission lines or for cable in telephonic transmission is sheathed with an elastic insulating material from a Thiokol composition and then drawn into a fluid-tight metal pipe of lead. Between the Thiokol and lead pipe sheaths there is forced a fluid—liquid or gaseous—under great pressure. The Thiokol insulating sheath may be made from a composition as described in the second example of U. S. Pat. 2,079,943. After having been fitted over the conductor, the Thiokol layer may be impregnated with a viscous oil. The lead or other metal shield is slipped over the Thiokol sheath and air under high pressure blown between the two so as to maintain a radial pressure between the Thiokol and metal sheaths.

McCormack—U. S. Pat. 2,149,975—March 7, 1939. *Refrigerator Seal.* (Assigned to General Motors Co., Dayton, Ohio).

An elastic-plastic material particularly suitable as a seal between metal parts in a refrigerating system comprises a plastic polychloroprene which is particularly resistant to sulfur dioxide or other refrigerating fluids. A suitable composition may comprise polychloroprene (100), litharge (50), zinc oxide (2), stearic acid (2.5), amorphous lamp black (100), mineral oil (5), and 1% of sulfur calculated on the volume of mass.

West—U. S. Pat. 2,155,457—April 25, 1939. *Sealing Gasket.* (Assigned to Crown Cork & Seal Co., Baltimore, Md.).

An oil-resistant gasket particularly adaptable for automobile engines is produced from a composition containing polychloroprene (200), stearic acid (2), zinc oxide (15), sulfur (2), accelerator (1.5), and cork, asbestos, disintegrated paper, etc. (810), with or without a quantity of polymerized tung oil. In the production of the gasket, the polychloroprene is worked in a mixer with the stearic acid, zinc oxide and polymerized tung oil when desired; whiting or talc may be added at this stage to impart density to the gasket, after which the sulfur and the accelerator are added and the cork incorporated uniformly to form a plastic, crumby mass which is milled into sheet and calendered into a backing cloth or placed in a mold, and cured.

Friedlander—U. S. Pat. 2,156,385—May 2, 1939. *Printing Rolls.* (Assigned to Dayton Rubber Mfg. Co., Dayton, Ohio).

A printing roll comprises a sand-blasted metal axle, a layer of hard rubber cemented thereto followed with a layer of soft rubber, and a surface layer of polyisoprene. The surface layer of synthetic rubber is cut from a calendered two-ply 0.075-gauge finished thickness and made into a sleeve with a butt splice. The spliced seam is protected by a small strip of frictioned fabric to prevent the seam from opening up when the sleeve is blown over the mandrel. This sleeve is inflated and fitted over the mandrel, wrapped with a layer of wet jacket liner, and cured in hot water. The cured sleeve is roughened, coated with a low temperature curing cement, turned inside out, and cemented over the soft rubber layer of the roll. After a final cure, the roll has a tough, smooth, glossy surface.

Kleine et al—U. S. Pat. 2,156,455—May 2, 1939. *Soft Felts.* (Assigned to I. G. Farbenindustrie, A. G., Germany).

Soft pliable felts resembling wool felts, but having different affinity for acid wool dyestuffs, consist of a mixture of wool fibers with 15 to 20% of organic thermoplastic fibers from polyvinyl chloride, polyvinyl acetal, chlorinated rubber, polychloroprene, etc. When it is desired to obtain a uniformly colored felt, each kind of fibers should be dyed separately with the same color before felting. When any of the above thermoplastic fibers is felted with white wool, and the felt dyed with wool dyestuffs, there will be produced a mottled colored felt. In one example, equal parts of wool waste and South African wool (3200), and after-chlorinated polyvinyl chloride, or polychloroprene, etc. (800), are well mixed, carded in the usual way, mixed again and oiled. These oiled mixed fibers are then passed in a carding machine and wound on a lap drum. The formed lap is cut into portions of 350 to 400 parts, which are fed at right angles to the direction of the cone. The double cone thus produced is cut along the base of the cone and felted on a plate felting machine. It is then fulled in dilute sulfuric acid, and the felt carbonized in the usual way, passed to the fulling beaters, and dyed. Wool fibers can be mixed also with rayon fibers and the thermoplastic fibers as above.

Safford—U. S. Pat. 2,160,230—May 30, 1939. *Resinous Products.* (Assigned to General Electric Co., Schenectady, N. Y.).

An oil-resistant resinous product is prepared by milling a cured alkyd resin on a milling machine to produce a coherent sheet, milling a plastic polychloroprene until broken down, and working the milled alkyd resin with the plasticized polychloroprene to form a uniform mass which is cured at 150° C. from one to five hours. Several examples are given. In one example, a material containing plastic polychloroprene (72.5), litharge (14.5), sulfur (0.7), rosin (3.6), antioxidant (1.4), and zinc oxide (7.5), is worked with a cured alkyd resin (15) dispersed in benzol (24). In another example, a plasticized polychloroprene (15), benzol (21), an alkyd resin (56), rubber cement (7), and sulfur (1) are worked into a uniform composition which can be used as spread coating, the rubber cement having been added to improve the spreading quality of the mixture. An alkyd resin of the type described in U. S. Pat. 1,897,260 is preferred. The above compositions are particularly suitable for printer's blankets.

Wiezevich—U. S. Pat. 2,160,995—June 6, 1939. *Plasticized Polyalkyline Polysulfides.* (Assigned to Standard Oil Development Co., New York, N. Y.).

Polyisobutylene or hydrogenated rubber is used for plasticizing synthetic rubber-like materials, such as polybutadiene, polychloroprene, Thiokol, etc. The patent claims a composition comprising a polyethylene sulfide type plastic and a polyisobutylene having a molecular weight above 800. In one example, a polyisobutylene of molecular weight of 140,000 (100) is milled with 20 parts of Thiokol to form a non-tacky mixture which can be dissolved in a suitable solvent or dispersed in water to produce solutions or dispersions suitable for making dipped goods, coating or impregnating fiber products, etc. In another example, 75 parts of a Thiokol composition containing dichlorethyl ether-sodium tetrasulfide (ether type polysulfide) (100), rubber (5), carbon black (25), hexamethylene tetramine (0.25), zinc oxide (10), and stearic acid (0.5) are milled with 25 parts of polyisobutylene of molecular weight of 130,000, and the mixture sheeted and cured at 300° F., thereby obtaining a product of high flexibility at low temperature and high resistance to oils. In still another example, a polyisobutylene of molecular weight of 15,000 (75) is kneaded with a polyethylene polysulfide (25), the resulting material being suitable for use as an intermediate layer for fabric, leather, and other coatings.

Wiezevich—U. S. Pat. 2,160,997—June 6, 1939. *Plasticized Synthetic Rubber.* (Assigned to Standard Oil Development Co., New York, N. Y.).

A polymerized isobutylene having a molecular weight between 800 and 15,000 or higher is used to plasticize polychloroprene or other synthetic butadiene rubbers, the quantity of polyisobutylene being from 0 to 50% of the mixture or more. In one example, 50 parts of polychloroprene and an equal amount of polyisobutylene of 128,000 molecular weight are milled together to form a sheet which is cured at 320° F. In another example, polyisobutylene of 80,000 molecular weight (75) is milled with polychloroprene (25) and carbon black (25) together with curing agents for the polychloroprene and cured as above. Or polyisobutylene of 8,000 molecular weight (60) can be milled with polychloroprene (40), carbon black (10), and stearic acid (2), and used for coating fabric, either in the form of an aqueous dispersion or dissolved in a suitable solvent. These mixtures may be dissolved in a solvent liquid and used for making dipped articles. Separate solutions of polyisobutylene and polychloroprene may be used and forms dipped in each solution to produce articles containing both plastics. Sulfur chloride may be mixed in one of these dipping solutions.

Habgood et al—U. S. Pat. 2,161,038—June 6, 1939. *Synthetic Rubber Vulcanizates.* (Assigned to Imperial Chemical Industries, Ltd., London, England).

Butadiene is interpolymerized with a methacrylic acid ester in the form of an aqeuous emulsion and the resulting rubber-like product compounded with vulcanizing ingredients and fillers and cured. Several examples for producing the interpolymeric rubber-like product, using different quantities of ethoxy or methoxy or phenoxy-ethyl methacrylate, etc., are given, the polymerization being carried in the presence of dimethylamin ethyl oleyl-amide acetate or similar emulsifying agents. The quantity of methacrylate in the mixture is less than that of the butadiene. In one example, the interpolymeric solid product recovered from the emulsion (100) is admixed with channel black (50), stearic acid (2), zinc oxide (10), tricresyl phosphate (20), sulfur (2), and mercaptobenzothiazole (1) and vulcanized at 141° C. for one hour to obtain an elastic rubber vulcanizate having an elasticity of about 68% and a hardness of 70 on the Shore Elastometer.

Habgood et al—U. S. Pat. 2,161,039—June 6, 1939. *Synthetic Rubber Vulcanizates.* (Assigned to Imperial Chemical Industries, Ltd., London, England).

This patent is a modification of U. S. Pat. 2,161,038 for obtaining interpolymers of butadiene with a methacrylic acid ester, in which the latter is replaced with chloromethacrylic ester, including chloro ethyl methacrylate, chloro propyl methacrylate, etc. The interpolymer is formed from an aqueous emulsion of the monomeric substances in the presence of diethylamin ethyl oleyl amide acetate or hydrochloridecetyl tri-methyl ammonium methyl sulfate, cetyl pyridinium metha sulfate, etc. The interpolymer is recovered from its latex by coagulation, etc., and contains more than 50% of the butadiene. Such an interpolymer (100) when admixed with channel black (50), rosin (5), magnesia (10), and zinc oxide (10) is vulcanized with or without sulfur at 141° C. for 45 minutes to one hour to obtain a "nervy" rubber vulcanizate resistant to oils and chemicals.

(To Be Continued)

BUY

☆ UNITED STATES ☆

WAR SAVINGS BONDS and STAMPS

Editorials . . . . . .

More Restriction Is Necessary

A GREAT deal of the confusion which still exists in the mind of the layman where the rubber situation is concerned may be laid directly to the door of some of the daily newspapers whose editors still jump to conclusions, despite the lessons of the past six months. A case in point is the widely misunderstood national mileage rationing plan as it affects the tire rationing program.

Rubber Director Jeffers has definitely gone on record to the effect that he will do everything possible to keep the wheels of all essential cars turning. To accomplish this end, he has approved the reclaimed tire program under which the manufacturers of the nation will produce some 25,000,000 all-reclaim tires in the next eighteen months. These tires will contain approximately four ounces of crude rubber and will be known as "War Tires."

As news of the reclaimed tire plan spread, the newspapers took it upon themselves to advise their readers that the worst was over and that there would soon be enough tires for everybody. That is definitely not the case. The all-reclaim tires, like all new, used and retreaded tires, will still be carefully rationed by the local rationing boards which, in fact, have been instructed to clamp down with regard to the definition of "eligible." It is Rubber Director Jeffers' intention to keep all *essential* cars on the road and to crack down still harder on those cars which are still used almost exclusively for pleasure driving.

The goal sought by the Office of the Rubber Director is elimination of all non-essential riding in order to spread farther the available tires and recapping materials, thus enhancing the chances of keeping necessary civilian automobiles on the road. As yet there is no plan to observe anything like "gasless Sundays," and the goal will be sought through patriotic appeals. While such appeals undoubtedly bring some response, they are not sufficiently productive to change the overall picture too greatly.

There are still far too many people who keep their cars in the garage all week and then use their full weekly four-gallon basic gasoline ration on Saturdays and Sundays. Such cars are used almost solely for pleasure purposes and should be kept off the streets. There is a great deal to be said in favor of maintaining the morale of the civilian in wartime, but, as we have said before, there is a war to be won, and civilian sacrifice—particularly of selfish pleasure—is nothing compared with that of the soldier, sailor and marine. Further driving restrictions are necessary.

Help Wanted

AS REPORTED elsewhere in this issue, the War Production Board has issued a call for experienced men in the rubber and other fields to join the Board in positions where their specific knowledge and experience will do the most good. There are several excellent positions open for rubber men in the Rubber Section of the Office of Civilian Supply as well as with other sections of the Board concerned with rubber. The point has often been stressed that in this war there are two kinds of soldiers—those at the front and those supplying them with the materials they need. The members of WPB, in a sense, are also "production soldiers", since upon their collective efforts depends the smooth functioning of industry. Consider this angle, too, when asking yourself, "Should I send in my application for employment?"—and then send in your application.

CURRENT NEWS OF THE MONTH

EXPANSION OF RAYON PLANTS TO PROVIDE TIRE CORD FOR ARMY DECREED BY JEFFERS

DISREGARDING criticism from several quarters, including prominent cotton senators, for expanding rayon plants to enable them to produce 50,000,000 pounds more of high-tenacity yarn for use in military vehicle tires, Rubber Director William M. Jeffers ordered the program put into effect on October 16. Mr. Jeffers, in a stormy session before the Senate Agriculture Committee on October 12 (as described in our last issue), defied pressure groups to interfere with the program. Involved is the expenditure of approximately $5,000,000 to expand the facilities of six rayon plants and to build an addition to a seventh. The high-tenacity yarn, according to those who have advocated its use in tires, makes possible a saving of 650 pounds of rubber for every 1,000 pounds of yarn.

Although a majority of cotton state senators went on record on October 13 to the effect that Congress will do nothing to prevent the Army getting truck, jeep and other tires with a rayon base if it wants such tires, the Senate Agriculture Committee nevertheless named a subcommittee to "gather all the facts for and against cotton" as a base for heavy duty tires. Senator Ellender, of Louisiana, was named chairman of the subcommittee.

Army Viewpoint Presented

Appearing before the special subcommittee on October 21, Brigadier-General Lucius D. Clay, chief of the Material Division of the Army Services of Supply, stated that the conversion of rayon facilities to produce cords for heavy duty tires was justified even if rayon was never used in place of cotton cords. The importance of the rubber situation and the tire situation justifies the facilities, he declared. He said, later, that if low-gauge cotton was found by tests to be satisfactory for use in combat tires, the Army would use it in preference to rayon. He also stated that the manufacturers had not yet made a combat tire with low-gauge cotton for testing.

Charles S. Reynolds, chief of the technical section of WPB's Rubber Branch, testified that it would take three to six months in his estimation to complete tests of the use of low-gauge cotton in synthetic rubber tires which generate more heat than those of natural rubber and therefore the tire industry's technical advisory committee had recommended the rayon program as "insurance" in case cotton proved less satisfactory.

J. J. Walsh, president of the Armstrong Tire & Rubber Co. of Natchez, Miss., and the Armstrong Rubber Co. of West Haven, Conn., told the subcommittee his company had found, in experiments, that high density low gauge cotton cord was just as good for large tires as it was for smaller tires. L. E. Sexton, tire buyer for Sears, Roebuck & Co., said tests conducted by his firm indicated that "rayon is not needed in tires."

In a letter to Mr. Jeffers on October 15, Lieut. Gen. Brehon Somervell, chief of the service of supply, said the Army had found "that high tenacity rayon is necessary in airplane tires because of its lightness and strength and in combat tires because of its ability to withstand the high temperatures which are generated in these tires in flexing due to their extreme thickness."

Mr. Walsh said his sales manager had been unable to sell any of the company's cotton cord tires to the Army, even for tests, because he was "brushed off" before he could "see the generals," and could get only as far as Capt. Richard E. Bolton, of the Ordnance Department. Captain Bolton, a former engineer in the rubber industry, told the committee that the industry had "not been able to make a satisfactory combat tire of cotton."

Ralph E. Loper, a WPB expert in the conversion of textile factories to war purposes, testified that five rayon companies would carry out the Government program. He also said the rayon would be used for parachutes and other purposes, as well as tires.

Cotton's Position Defended

Dr. Claudius T. Murchison, president of the Cotton Textile Institute, Inc., addressing the 16th annual meeting of the Institute in New York City on October 22 stated that during the past few years approximately 650,000 bales of cotton have gone annually into production of automobile tires. A few years ago, he said, probably not more than five or six, high-tenacity rayon suitable for tires did not even exist.

"Not until about two years ago was it even heard of," Dr. Murchison added, "outside of technical circles, and yet during the past few weeks we have witnessed the amazing spectacle of the repudiation of cotton tire cord for Army purposes, and the ordering of an enormous expansion of rayon production, even at the cost of diverting 8 or 9 million pounds of strategic war materials, in order to supply the Army with rayon cord tires.

"Those who are familiar with the tire situation know that this development promises to wipe out, at one stroke, 10% of America's normal peacetime consumption of cotton. For the purposes of this statement I express no judgment whatever as to the merit of the decision. But I can say that it involves fierce controversy and a deplorable lack of scientific evidence."

Discussion of the need for refinement of Standard D-179 to provide possible changes in methods to cover the testing of rayon as well as cotton tire cords featured a meeting of the Sub-Committee on Tire Fabrics of A. S. T. M. Committee D-13 on Rubber Products, held at the Hotel Pennsylvania in New York City on October 15. F. C. Kennedy (U. S. Rubber) presided at the meeting.

To Hold Letter Ballot

Dr. E. G. Scroggie, of E. I. du Pont de Nemours & Co., Inc., who has made a special study of tests for rayon tire cords, led the discussion at the meeting. The group finally decided to circularize the membership by letter ballot concerning the relative merits of incline plane and pendulum testing machines for testing rayon cords.

The crux of the entire situation lies in the charges of cotton interests that the powerful rayon interests, with plants constructed at government expense, will be able to compete for the general tire business after the war on a competitive basis and that therefore the biggest single market for cotton may be lost. Testimony developed so far seems to indicate that synthetic tires with a rayon base can resist heat better than those with a cotton base and would be better for desert and other uses. On the other hand, testimony has been presented to indicate that tires with a cotton base resist moisture far better than those with rayon.

The rubber industry itself, with the exception of Armstrong and a few other smaller tire manufacturers, is apparently in favor of the use of rayon cord tires,

according to reports from Akron. The first rayon commercial tires were put on the market in 1937 and in 1941 only 6% of all tires made in this country were made of rayon cord fabric. Rayon cords for tire construction are processed in the same way as cotton cords.

Furnace-Type Carbon Black

A complete allocation system for furnace-type carbon black, effective November 1, was established by WPB on October 16 in General Preference Order No. M-244. In issuing the allocation order, WPB stated that this material is the most important pigment used in the compounding of synthetic rubbers and facilities for its production are less than the amount needed for present and prospective needs.

The definition of furnace-type carbon black used in the allocation order is "a black produced by thermal decomposition, including the soft and semi-reinforcing blacks but excluding the channel carbon black and lamp blacks."

Persons seeking authorization to accept delivery of this type of black are required to file Form PD-600 while those seeking authorization to make delivery are required to file Form PD-601. Purchase, delivery and use of 100 pounds or less of furnace-type carbon black to any one person in any one month are exempted from the restrictions of the order.

Rubber Footwear

Special provision under which mail order houses and others were permitted to ship men's rubber boots and rubber work shoes to consumers whose orders were postmarked before midnight September 29 was withdrawn on October 15 by OPA. From that date on, it was stressed, consumer sales even by mail order may be made only to persons who surrender ration certificates. This order was contained in Amendment No. 2 to Ration Order No. 6.

Amendment No. 3 to the ration order, issued on October 28, provides that any person directly affected by the action of the rationing board, state director or regional administrator taken with reference to any application or petition in connection with Ration Order No. 6 may appeal from such action. The appeal must be made according to the provisions of Procedural Order No. 9.

Steps to assure that a particular type of rubber footwear best suited to the needs of miners will be rationed only to persons in that occupation were announced by OPA on November 5. The kind of rubber footwear used in mines is classified as Type 5 under the rationing regulations and Amendment No. 4 to Ration Order No. 6 provides that certificates authorizing purchase of this type of footwear will be granted only to miners.

The new amendment also provides that Type 5 now includes only fiber mine pacs and bootees, 10 inches or more in height but below the knee in height, and any other rubber footwear of this class that is "laced over the instep." Because olive drab, clay, or khaki-colored rubber pacs and bootees which technically come under this new definition of Type 5 are too light in weight for miners, the amendment further provides that rationed rubber footwear in these colors included in Type 5 may now be sold to customers who present certificates that call for Type 4 (below-the-knee light boots). OPA cautioned, however, that in all other cases dealers may sell only the type of rationed rubber footwear called for by each individual certificate.

Other rubber footwear not suitable for use in mines, but previously classified in Type 5, now has been reclassified. Items thus removed from Type 5 either because they are not rubber mine pacs or bootees, or because they are not "laced over the instep," now fall into either Type 4, or Type 3 (below-the-knee heavy boots), depending on whether they are of light or heavy construction. In these classifications they may be sold to farmers and others who normally will be issued certificates for Types 3 or 4.

Dealers in rubber footwear are not required to make any trade-in allowances to customers who turn in unserviceable men's rubber boots and workshoes in buying replacements, OPA stated on October 27. The announcement was made to avoid any misunderstanding that might arise as to pricing because of the provision in Ration Order No. 6 requiring those who buy any of the rationed footwear to dispose of any worn-out rubber footwear owned by them. To make plain that such turn-ins do not affect the price that may be charged for rationed footwear under Maximum Price Regulation No. 229, Amendment No. 2 to the regulation, effective October 31, was issued.

Camelback

The maximum price at which the Webster Rubber Co., of Warren, Ohio, may sell its predesigned camelback, which has a non-skid tread pattern cut into it in the process of manufacture, has been set at 31c a pound for Grade C by OPA. The allowance of 8c a pound over the 23c ceiling price applicable to the conventional smooth camelback of the same grade was made after a careful study of production costs. Webster Rubber is the only company

RUBBER DIRECTOR JEFFERS MAKES TOUR OF RUBBER FACTORIES

Rubber Director William M. Jeffers has gone into the field to learn as much as he can of rubber, as these pictures show. UPPER LEFT: J. J. Newman, vice-president of Goodrich (left), watches the inspection of one of the first tires of reclaimed rubber made at the Akron plant. This tire was shown to Mr. Jeffers on his inspection of the plant last month. UPPER RIGHT: Here Mr. Jeffers is testing the contents of one of the mixing vats in the Chemigum plant operated by Goodyear at Akron. LOWER LEFT: Fred S. Carpenter, general manager of the tire division of U. S. Rubber, shows Mr. Jeffers one of the new all-reclaim tires made by that company. LOWER RIGHT: H. P. Schrank, vice-president of the Seiberling Rubber Co. (left), explains a detail of rubber boat construction to the Rubber Director (right) during his tour of the Seiberling plant, while J. P. Seiberling, company president, looks on.

known to be selling predesigned camelback. It is made for them by the Denman Tire & Rubber Co.

The higher price for this type of camelback is permitted under Amendment 1 to Maximum Price Regulation No. 131. The same amendment specifically includes base stock and lug stock within the definition of camelback. These two items have been covered by the regulation since it was issued, and the present change in the definition is only to prevent possible misunderstanding.

A recent survey of the serviceability of tire recaps from the Grade F material now available (2% natural rubber and 98% reclaim) indicates that this material is inefficient and expensive. Whereas prewar recaps of Grade A material (73% natural rubber and 27% reclaim) could be counted on for approximately 20,000 miles of satisfactory service, rural letter carriers and taxicab companies from widely separated sections of the country report that the present Grade F recaps are delivering an average of only 3,000 miles of unsatisfactory service.

The survey also indicated that since the number of times a tire carcass can be recapped is limited to three or four, current practices of recapping with inferior material are greatly shortening the lives of serviceable carcasses.

Rubber Thread

By a special amendment to the General Maximum Price Regulation, the Easthampton Rubber Thread Co., Easthampton, Mass., has been permitted by OPA to set special maximum prices on thread and tape produced by substituting plastic for rubber material. Use of plastic in this case, OPA determined, quadrupled material cost with much greater labor and production costs. The prices allowed and the opinion expressed by OPA is predicated on maximum production of 500 pounds per month and is applicable as long as production does not exceed that volume.

AUTHORIZE CONSTRUCTION OF TWO ADDITIONAL SYNTHETIC PLANTS

Two new polymerization plants, both to be operated by the Firestone Tire & Rubber Co., will be constructed in Louisiana under contracts awarded by the Defense Supplies Corporation, according to word from Washington early this month. The new plants will be constructed by the H. K. Ferguson Co., of Cleveland, Ohio. They will produce G.S.R. (Buna S) from raw materials supplied by the Standard Oil Co. of Louisiana in one plant and by Cities Service, Inc., at the other. No data as to the size or annual capacity of the plants was made available.

It is believed, however, that the Firestone projects will supply part of the additional 300,000 tons of synthetic rubber called for in the Baruch Committee report. The latter recommended ultimate annual production of 1,100,000 tons, consisting of 845,000 tons of Buna S, 132,000 tons of Butyl, 69,000 tons of neoprene, and 60,000 tons of Thiokol.

Study Use of Wineries

An analytical study looking toward possible utilization of the large wineries in California for the production of alcohol to be turned into butadiene for the synthetic rubber program has been launched by the Chemicals Branch of WPB. The study was announced by Rubber Director Jeffers who added that the Chemicals Branch will report its findings after distillation engineers have completed their research.

In the interests of the program, an organization has been formed in California by the state's brandy makers and fruit distillers. Called the California Wineries Rubber Committee, it includes the leading wine producers, including the Roma Wine Co., one of the largest concerns of its kind in the country. Chemistry experts from Stanford and the University of California are working with the organization.

It is believed that there are 99 different plants throughout California which will need a minimum of raw materials to shift from the use of sugar fruits to grain. Some plants have already been surveyed and it has been determined that these plants could quickly be converted to manufacturing centers for butadiene. Conversion of these plants for this purpose is said to be "do-able, but tricky." If the findings of WPB are favorable, it is probable that a plant for producing butadiene from alcohol will be installed on the Pacific Coast. Present plants will make butadiene from petroleum.

Henry J. Kaiser, noted shipbuilder and steel maker, has already submitted a plan to WPB to expand his California steel plant by installing an additional blast furnace along with a butadiene and a styrene plant. Mr. Kaiser expressed his belief that the company can obtain sufficient supplies of alcohol from wineries in the Fontana area of California and from grain fields in the same area to make substantial amounts of butadiene. The Kaiser concern has previously expressed interest in a $75,000,000 project to produce butadiene from petroleum to be located on the coast.

Expand Furfural Production

Authorization for the construction and operation in the Southeast of a plant to produce approximately 12,000 tons of furfural a year has been granted by Rubber Reserve to the Q-O Chemical Co., a subsidiary of the Quaker Oats Co. The plant will be built with funds advanced by the Defense Plants Corp. Furfural is a volatile, aromatic oil, obtained by the distillation of wood, bran, corncobs, and similar materials, and is finding increasing importance in the synthetic rubber program.

Furfural was freed from price control to the extent sold or delivered for use in the manufacture of synthetic rubber by issuance of Amendment No. 37 to Supplementary Regulation No. 1 by OPA on October 29. The exception is the same as that granted earlier to other ingredients of synthetic rubber.

Synthetic from Wood Products

Production of a synthetic rubber from wood products, one capable of being vulcanized and suitable for use in bicycle tires, heels and other products, but not for automobile tires, was announced in Stockholm, Sweden, on October 24. The process has been developed by Gosta Ehrensvard, a young Swedish chemist, and an experimental factory has been opened at Gislaved by the Swedish Cooperative Association. The new synthetic has been given the name "Telax."

No details of the Ehrensvard process have been made public, according to the American-Swedish News Exchange, of New York City, which points out that earlier in the year Professor The Svedberg, head of the Physical-Chemical Institute of Uppsala University, showed samples of synthetic rubber produced from calcium carbide.

Pontoons Made of Synthetic

The Army Engineers Corps now is ordering only pontoons or pneumatic floats made of synthetic rubber, it was revealed in Akron on October 31 by Brig. Gen. Raymond F. Fowler, chief of the supply division, at ceremonies accompanying the presentation of an Army-Navy "E" award to the B. F. Goodrich Co.

In making the award, the army spokesman told how Goodrich reduced drying time for the floats from three days to three hours by adopting a kiln-dry method and how still more time was saved by vulcanizing them instead of cementing them. He also stated that Goodrich had "thrown open its doors to other manufacturers, permitting them to use these time- and rubber-saving methods."

Howard E. Fritz, director of research of the Goodrich organization, told the Engineers Society of Pennsylvania at a meeting held in Pittsburgh on October 30 that tires whose rubber content is 99.84% synthetic rubber are now being tested on the highways in various parts of the country.

Dr. Gustav Egloff, director of research for the Universal Oil Products Co., Chicago, in an address made on October 23 in New York City before the American Institute of Chemists, of which he is president, made the prediction that synthetic rubber tires in the future will have a life of at least 100,000 miles. He also predicted that synthetic rubber will sell for less than 15c a pound once mass production is in effect.

LAUNCH PLANTING OF CRYPTOSTEGIA; OTHER CRUDE RUBBER NEWS

Convinced that *cryptostegia grandiflora,* the rubber-producing vine, is the quickest answer to the country's crude rubber needs, the *New York Daily News,* which has constantly found fault with the government's handling of the entire rubber situation, has launched a large-scale experimental planting of that vine on land leased just outside of Brownsville, Texas. C. S. Reid, a citizen of Brownsville and an official of Cameron County, is in charge of the project. Planting is in charge of Fred Rusteberg, Jr., one of the leading farmers of the lower Rio Grande Valley, from whom 20 acres were leased.

It was explained that part of the experimental planting will be under irrigation and part will be dry-farmed so that proper cultivation methods may be determined for the plant, which can be harvested in less than a year. Cooperation will be extended to the project by the staff of the Texas Agriculture Experiment Station at Welsaco, Texas, and by Loren G. Polhamus, senior agronomist, Bureau of Plant Industry, Department of Agriculture, according to a statement issued by the New York newspaper.

Goodrich Donates Rubber Seeds

The gift of thousands of seeds from selected Hevea rubber trees growing in its experimental nursery on the island of Santo Domingo to the Government was announced by the B. F. Goodrich Co. early this month. The seeds are to be given to the Bureau of Plant Industry of the Department of Agriculture which has under its control the program for promoting the cultivation of rubber bearing plants in the Western Hemisphere. Plans to collect the seeds have already been started by the Bureau.

The experimental nursery at Santo Domingo has been maintained by Goodrich since 1931. Test tappings have shown the presence of trees yielding as much rubber as some of the high-yielding hybrid trees of the Far East. The trees are also free of the South American leaf blight and are the offspring of seeds collected in the uplands of Brazil where disease-resistant varieties are found. In addition to the seeds, Goodrich is also supplying the Government with budwood from the high-yielding trees.

Latin American Developments

In the meantime activity in the crude rubber situation continues to occupy the attention of various Latin American governments. All rubber produced in Brazil has been placed under the exclusive control of the "Rubber Credit Bank." Under the terms of a decree signed by President Vargas on October 17, the bank has the right to seize stocks if it is found that they are abnormally large or if their destination is considered questionable. The bank will also oversee all production.

The Brazilian decree will practically stop all speculation insofar as the rubber market is concerned in that vast country. It protects the *seringueiro* by forcing the landowner to allot to each *seringueiro* working for him one hectare of land. It also includes several other steps designed to protect living conditions and provides for a pay increase.

According to the Office of the Coordinator of Inter-American Affairs, the feeding of rubber tappers and their families in the vast Amazon basin, one of the most complicated food problems of the war, is being solved. A $4,000,000 fund has been provided by the United States and Brazilian governments for improvement of food production in Northern Brazil and the stimulation of production of vegetables, chickens, dairy products and other foods is under way.

The potentially large rubber production of Venezuela has become a government monopoly by presidential decree. Fixed prices have been established for rubber from both *Hevea brasiliensis* and Castilla trees and only the government or government-designated agencies will be permitted to export the rubber. Fines will be levied on persons convicted of hoarding or illegally selling raw rubber. The Ministries of Agriculture and Treasury are in charge of the program.

Substantial amounts of balata obtained from the latex of a tree known as the "tuna" are available in Nicaragua, according to reliable reports. The trees grow prolifically on the east coast of the country in concentrated areas. Although estimates vary, it is believed that at least 20,000 pounds of balata can be collected each month from this hitherto untapped source. The quality of the balata is said to be equal to that now being secured from Colombia and Brazil.

An agreement between the United States and Haiti governments calling for the development of a 100,000-acre plantation to grow *cryptostegia grandiflora,* the rubber-producing vine, in Haiti is reported to have been reached on October 31. According to the report, 100,000 men will eventually be employed on the project.

New Guayule Bill Signed

The new Guayule Bill, sponsored by Senator Downey of California, was signed by President Roosevelt on October 22. It was approved by the Senate on September 21 and sent to the House of Representatives where it was approved with minor changes on October 8 and returned to the Senate for final action.

Under the terms of the new bill, the Department of Agriculture is authorized to increase plantings from the 75,000 acres provided in the original law to 500,000 acres. An appropriation of $19,000,000 is approved for plantings in California, Texas, Arizona and New Mexico. More than 200,000 acres planted to guayule is visualized by the Department by the Spring of 1944.

SCRAP RUBBER CEILINGS ARE SUBSTANTIALLY INCREASED BY OPA

Substantial increases in the maximum prices which may be charged to reclaimers and other processors for several classifications of scrap rubber were announced by OPA on October 26. The revisions are contained in Amendment No. 3 to Revised Price Schedule 87, as Amended, and were effective on October 31. Ceilings were increased on scrap tires, tire parts and black truck tubes. They apply only to sales made by the Rubber Reserve Co., since that organization is now the sole seller of scrap rubber to processors.

The increase, which permits sales of scrap tires and tire parts at levels higher than heretofore, was put into effect by OPA so that Rubber Reserve will be able to conduct its scrap collection and resale operations without the large deficits entailed in the program under the former maximums.

Several months ago, in an effort to stimulate collection of sorely needed scrap rubber, Rubber Reserve offered to buy tires and miscellaneous scrap in carload lots at $25 a ton, a substantially better price than collectors had been able to realize in a great majority of cases.

After paying this inducement price and bearing the freight cost to consuming centers, Rubber Reserve has been faced with a sizable deficit in its sales to consumers at the OPA ceilings.

New Ceiling Prices

The ceiling on whole tires is increased from $18 to $30 a ton at Akron and by corresponding amounts at other consuming centers. No. 1 peelings may be sold at $75 a ton instead of the $47.50 price that was permitted previously at all reclaiming centers except Los Angeles where ceilings on scrap generally are lower. Ceilings on other grades of tire parts have been lifted correspondingly.

(The increase in prices that Rubber Reserve may charge under the higher maximums will be borne by the industrial consumers whose earnings generally have shown an upturn since their plants have been operating at near capacity.)

Another change in the scrap rubber price regulation is a reduction in the number of classifications for which price ceilings are established. This is done by grouping former separate classifications. Formerly, for instance, there were separate ceilings for mixed passenger tires and mixed truck tires. Now both are

included in the same classification and are under the same price ceiling.

(EDITOR'S NOTE: It has been reliably reported that the effective date of this new order has been postponed from October 31 to December 15 and that there is a good possibility that the price increases provided in the amendment may be modified or annulled. While reclaimers generally enjoyed an excellent first six months, business fell off sharply in the third quarter of the year and still further in the current quarter. Use of reclaim in civilian tires, as recommended by the Baruch Committee, will change this situation materially in the early future.)

Shipment of Scrap

Under a special ruling recently announced by Rubber Reserve, dealers are now permitted to ship miscellaneous scrap rubber in combination with tires and tubes, provided the miscellaneous scrap is properly packaged either in bales, boxes, bags or other containers. However, in combination cars the miscellaneous material must be loaded last so that it is next to the car door. This is required so that the miscellaneous scrap may be unloaded at destination without making it necessary to unload the tires or tubes which, in most cases, are shipped in the same car to the reclaiming plant.

TIRE SITUATION CONSIDERABLY IMPROVED BUT NOT YET SOLVED

Although the tire situation is considerably improved, published reports that the nation's rubber problem has been "licked" and that tires for all will be available by the end of the current month were branded as erroneous and misleading by Rubber Director Jeffers on October 24. He warned newspaper men attending a press conference against publishing "overoptimistic reports" and stated that "we will have tires for everyone when we have the tires and not before." He added that "there has been no change in the basic situation and I foresee none."

The optimistic reports were largely based on the relaxation of certain of the eligibility rules under the Revised Tire Rationing Regulations, plus the fact that it is now common knowledge that the tire manufacturers are producing all-reclaim tires, with a small percentage of crude. These reclaimed tires, under an amendment to the rationing regulations, are now moving into retail channels, but are of course subject to those regulations as are all tires.

The reclaimed rubber tires will be known as "war tires." When these tires are received by civilian motorists they will lack the familiar paper wrappings—a move to save paper for urgent war purposes—but will carry tags pointing out that the tires are made with reclaimed rubber and should be driven at speeds of 35 m.p.h. or less. The tag, in accordance with wartime specifications, will also indicate that the tire is made with "first-quality fabric" and will recommend proper inflation, rotation of tires, wheel alignment, balanced wheels and brake adjustments.

Tires Being Turned In

Under the national gasoline rationing regulations, which go into effect on November 27, no motorist owning more than five tires will be eligible for gasoline supplies. Car owners must list all their tires by serial numbers and certify that they have no more than five tires for each car. Falsification of the tire statement carries a penalty of a fine up to $10,000 and a maximum prison term of ten years.

OPA began the purchase of idle tires on October 15. To sell his tires to the Government the individual has only to telephone or write the Railway Express Agency office nearest his home and the Agency's truck will pick up the tires. The owner is given a receipt for the tires and receives a check, or war bonds and stamps, from the Government shortly thereafter. Ceiling prices are paid for the extra tires, used or new. Prices to which each tire is entitled is determined at warehouses by paid tire experts. Damaged but repairable tires are appraised at their ceiling prices less cost of repairs. Scrap rubber prices are paid for those which cannot be made serviceable.

Although it is too early to determine the amount of idle tires turned over to the Government under the regulations, and no official statements of any kind have been issued at this writing (November 7), officials of the Railway Express Agency have reported that the public was responding favorably. In some quarters a substantial increase to the tire stockpile is anticipated as a result of the plan.

Plan for Tire Inspection

Details of the nation-wide program for periodic inspection of the tires on all operating vehicles, not only as a means to keep tires in good repair but also as a check against the illegal use or sales of passenger car tires, were announced by OPA on October 16. Under the program, neither private automobiles or commercial vehicles will be certified for continued operation when their tires need repairs or when mechanical faults are causing unnecessary tire wear. Moreover, if a passenger car owner attempts to keep and use a tire in excess of the five permitted under the gasoline rationing regulations, the violation will be disclosed by the inspection system.

Original inspection of all passenger cars must be made between December 1, 1942, and January 31, 1943. Commercial vehicle inspection starts on November 15. Indications are that there will be about 130,000,000 or 135,000,000 inspections annually and OPA expects to have at least 100,000 fee-basis inspectors, so that the average number of cars handled by each will be only about four per working day. At last reports, there were approximately 60,000 inspectors appointed.

After the initial inspection, passenger car owners who get the minimum ration of gasoline—the basic A book—under the nation-wide rationing that becomes effective November 22, will be required to get their tires inspected every 4 months at official OPA inspection stations. The same requirement applies to those who hold only the "D" gasoline book for motorcycles. Persons who get gasoline books permitting them to drive greater distances in a given period must get inspection every 2 months. Commercial vehicle tires must be inspected every 2 months or every 5,000 miles, whichever comes first.

Recapped Tire Quota Raised

Reflecting substantial expansions in the eligibility lists which have been announced in recent weeks, the quota for passenger car recapped tires and recapping services for rationing in November was set at 1,090,206 by OPA on October 26. This compares with 939,940 in October. The quota of Grade II new tires, which are available to certain classes of war workers when their casings are not recappable, was increased from 98,755 to 134,470.

The November quota of new passenger car tires for rationing to eligibles on List A was 60,513, or slightly less than the 60,676 provided in October. The passenger car inner tube quota was reduced sharply from 315,138 to 148,037. Local boards were also instructed to make absolutely sure that certificates for tubes are not issued unless the applicant's old tubes are utterly beyond repair.

November truck tire quotas were smaller than those for the previous month, following a seasonal pattern of declining replacement sales in Fall and Winter months. The quota was 179,460, compared with 202,840 for October, with a recap allotment of 196,708 against 238,973, and a tube quota of 194,062 against 225,620.

Rationing Amendments

Three new amendments to the Revised Tire Rationing Regulations have been issued by OPA since our last report, as follows:

Amendment No. 38, issued on October 17 and effective October 20, states that any passenger tire recapping quota remaining unused in the closing days of the month will be available for careful rationing to drivers regularly carrying other passengers to and from work in a group-ride or share-ride arrangement. To be eligible under this provision, a driver must show that he regularly car-

ries three or more other passengers to work and back.

Amendment No. 39, issued and effective October 22, permits the transfer of tires and tubes to the Rubber Reserve Co., Reconstruction Finance Corp., or other agents, including the Defense Supplies Corp.

Amendment No. 40, issued and effective October 22, defines Grade III tires and dealers; sets up dealer allotments, eligibility, rules governing distribution of Grade III tires, new or recapped, among manufacturers, Defense Supplies Corp., and dealers; and covers deliveries of camelback for Grade III tire recapping purposes. Grade III tires are those made of reclaimed rubber and recapped and used tires. The amendment was issued to enable dealers to increase their stocks of passenger car tires so as to be ready to make consumer sales when the new mileage rationing program becomes effective on November 22.

New Price Regulations

Maximum charges that may be made for services performed in connection with the sale of new, used or recapped tires and tubes or the applications of recaps to tires must be computed under the separate price regulations covering those commodities rather than under the regulation applying to services, OPA announced on October 28. The clarifying change in MPR No. 165 was made by Amendment No. 4, effective November 3. The services include demounting and mounting tires and pick-up and delivery.

MPR No. 165, as amended, which puts ceiling prices on services in March, 1942, was further amended to make plain that it does not supersede or conflict with the service charge sections of Revised Price Schedule No. 63 (New Tires and Tubes), Revised Price Schedule No. 66, as amended (Recapped Tires and Recapping Services), or MPR No. 107 (Used Tires and Tubes).

Revisions in some sections of the price regulation covering tire recapping (Revised Price Schedule No. 66) were announced by OPA on October 29 in a move to permit adequate compensation for quality workmanship in the application of the lower grades of recapping material now in general use under WPB regulations.

Result of the changes, in all but a few instances, is that the new maximum prices, although they are higher than those heretofore applicable for recapping with the lower grade material, are not so high as prices for recapping with the better quality rubber that was generally used until shortly after the turn of the current year.

At the same time, the price regulation that sets the maximums for basic tire carcasses—tires worn smooth and suitable for recapping—has been revised to permit sellers to charge prices high enough to cover the cost of repairs needed on most casings now held in trade channels.

Restrictions on the sale of used passenger truck tires and tubes were considerably tightened by OPA on October 28 by the issuance of Amendment No. 6 to Maximum Price Regulation No. 107. The order, which was effective November 3, provides minimum quality specifications for such products and provides for the posting of prices and the filing of statements of maximum prices. The amendment also defines such terms as "sound," "vulcanized spot repair," "vulcanized reinforcement repair," and "vulcanized sectional repair," as used in the industry.

Permission was granted to the Mansfield Tire & Rubber Co., Mansfield, Ohio, on November 4, to increase the selling prices of two brands of bicycle tires and one brand of tube to relieve the company of a "squeeze" under the General Maximum Price Regulation. Special ceiling prices were set by issuance of Order No. 139 under Section 18 (c) of the general regulation.

Sales to Defense Corporation

Clearing the way for sale of unrepaired tires to the Government under the Idle Tire Purchase Plan, OPA issued Amendment No. 5 to Maximum Price Regulation No. 107 on October 22. This amendment provides that the price ceiling which governs ordinary transactions in damaged and used tires will not apply to sales to the Defense Supplies Corporation. Under its terms, DSC is permitted to set the price for a damaged tire on the basis of a uniform schedule of repair charges without reference to the method prescribed in the original price regulation.

New ceiling prices for used and recapped tires sold to DSC under the Idle Tire Purchase Plan were covered in a series of orders issued by OPA on October 28. None of the new ceilings on passenger car tires is lower than the former maximums. For instance, a sound, recappable 6.00 x 16 tire carcass, for which the previous ceiling was $1.50, now has a maximum price of $3.50. The ceilings for 6.25 x 16 and 6.50 x 16 carcasses, formerly $1.50 for both sizes, have been raised to $4.00.

Authority for DSC to pay the new ceiling prices, even on tires that were turned in before the effective date of the changes, is contained in Amendment No. 3 to Revised Price Schedule No. 66 (Retreaded and Recapped Tires, etc.), Amendment No. 7 to Maximum Price Regulation No. 107 (Used Tires and Tubes), and Amendment No. 35 to Supplementary Regulation No. 1 under the General Maximum Price Regulation. The amendments are retroactive to October 15.

Extend Retreading Control

Further control of the tire retreading industry was established by WPB on October 12 with the issuance of an amendment to Order No. L-61, restricting the production and distribution of a number of additional machinery and equipment items essential to the industry.

The original order controlled the production and distribution only of full circle molds, matrices, holders, tables, steam chambers, kettle curing devices, curing rings, bands and pressure plates. The amended order extends control to sectional molds and matrices, repair and spot equipment, tire spreaders, tire buffers, spacer rings, curing rims, mechanical stitchers, rollers and regroovers.

No items named on the list may be produced, except to fill orders rated A-9 or higher on a Preference Rating Certificate PD-1A or PD-1X, or forms of the PD-408 series. The order and amendment also provide that no manufacturer or distributor of retreading, recapping and repair equipment or parts thereof may sell, lease, rent, deliver or otherwise transfer any new equipment or parts except to fill the same type of orders.

Share-Ride Mandatory

Certain industrial and other plants with 100 employees or more will be required to set up organized transportation plans under nation-wide mileage rationing to assure workers adequate means of getting to their jobs despite rationing restrictions, OPA announced on October 28. The transportation plan, in each case, will be organized under a committee, or individual, thoroughly familiar with transportation facilities around the plant, with distances employees must travel, their needs for autos to get them to and from work, and their ability to share cars.

Rubber Men Wanted

There are several openings in the War Production Board, specifically in the Rubber Section of the Office of Civilian Supply, for qualified men with rubber experience, especially in the field of mechanical goods, footwear and synthetics. Men desired are those with some knowledge of the compounding and processing, as well as the end use, of such products as hose, conveyor and transmission belts, tank linings, rubber-covered rolls, wire and cable insulation, battery containers and parts, etc. This is a critical period in the history of the country and members of the industry, with technical or manufacturing knowledge, can be of real service to both the industry and the country at large by lending their talents to the government. The time element is important and immediate applications are welcomed. Interested applicants should secure Form 8 or Form 57 from their local postmasters. The form, properly completed and notarized, should then be mailed to Room 271, Civil Service Building, Washington, D. C., where it will receive immediate attention.

Under the new OPA mileage regulations, the committee or individual appointed must review the applications of all employees at such establishments seeking more gasoline rations than the basic A book provides. Committee approval must be obtained before the application is submitted to the local rationing board.

Report on Tubeless Tires

According to C. N. Emmons, superintendent of the municipal garage and shops in the District of Columbia, initial experiments with tubeless tires have proved successful. In a ten-day period, he revealed, an official car had operated 350 miles with tires mounted directly on the rims, made air-tight with puncture-proof fluid, and inflated through a metal valve inserted where the tube's rubber valve normally appears. A statement recently made by Senator Thomas, of Oklahoma, indicated that 456 tires without inner tubes have been mounted on 150 cars in experiments being conducted in Tulsa. These latter experiments are believed to be based on the tubeless tire plan advanced by John B. McGay, a Tulsa manufacturer.

An interesting tire development has also been reported by officers of the Armored Force School at Fort Knox. This development, it was said, makes it possible for a military motorcycle to ride circles around jeeps in desert sand and one entire armored division training in the California desert is being equipped with the new tires. No specific information as to the actual development was revealed.

Successful use of cork tires for airplane landing gear is claimed in a report from Portugal, based on trial flights conducted by the military aviation command of that country. Only slight vibration on landing and taking off was reported by the test pilot and these faults can be eliminated in the belief of Adalberto Teles Monteiro, inventor of the cork tires.

Demand for Soap Increasing

A memorandum recently issued to the soap industry by Roscoe C. Edlund, manager of the Association of American Soap & Glycerine Producers, based on the Baruch Committee report, estimates that the production of synthetic rubber under present processes will require annually 100,000,000 pounds of soap. This figure is based on a production of approximately 1,100,000 tons of synthetic rubber a year. According to the memorandum, the Rubber Reserve Co. has recognized the need of this soap by issuing elaborate contract specifications. Although the manufacturing methods for producing synthetic rubber vary with the manufacturer, the memorandum states that certain principles governing the use of soap are common to nearly all processes. Soap plays an important role in the polymerization process.

Take An Inventory

Major General Lewis B. Hershey, Director of Selective Service, has issued a warning to every manufacturer, including those in the rubber industry, to make a prompt inventory, appraisal and analysis of the manpower in his own plant as he would inventory his stockpile. In order to keep production going and at the same time furnish men for the armed forces, industry should now establish an orderly replacement program. Fewer deferments will be granted in the future as the war gets tougher and the casualty lists grow.

Additions at Rubber Corporation

As previously announced, the Revertex Corporation of America has acquired a substantial interest in the Rubber Corporation of America, which maintains offices in New York City and a factory in Brooklyn, N. Y. Several members of the Revertex staff have transferred their activities to the Rubber Corporation, including Dr. K. H. Quasebarth, who is now in charge of laboratory and technical production control, and Charles S. Powell and Donald W. Hoover, research chemists. William Merton, president of Revertex, is also a vice-president of the Rubber Corporation.

Bulletin on Scrap Rubber

A summary of published data on scrap and reclaimed rubber, prepared as background information for the use of writers needing material on these subjects, has been issued by the Rubber Manufacturers Association, 444 Madison Ave., New York City. Considerable data is included on both scrap and reclaimed rubber, including estimates as to present supplies and future requirements. Some of the data was taken from RUBBER AGE and the RUBBER RED BOOK. Copies of the summary are available without cost on request. A similar summary on guayule was issued by the Association last June.

Creedon Heads New Construction

Frank R. Creedon was named Assistant Deputy Rubber Director in charge of new plant construction by Rubber Director Jeffers on October 23. Until his new appointment, Mr. Creedon was in charge of construction of munitions manufacturing plants and before that was chief engineer of the Public Works Administration in charge of construction in eleven Northeastern states. He is a native of Brockton, Mass., and a graduate of the Massachusetts Institute of Technology.

BUREAU OF MINES DISCUSSES FLAMMABILITY OF BUTADIENE

The explosive hazard of butadiene, the combustible gas which is finding increasing importance in today's war program, is pointed out in a report recently submitted to the Secretary of the Interior by Dr. R. R. Sayers, director of the Bureau of Mines.

Calling attention to the possibility of explosions in industrial establishments from the use of combustible organic chemicals which a few years ago were laboratory curiosities, but today are manufactured in large quantities, the report declares that this danger is inherent in such substances as butadiene, which is used in one of the processes for manufacturing synthetic rubber.

To provide industry with a key to the explosibility of butadiene, the Bureau of Mines conducted a number of tests to determine the limits of flammability of the gas. The Bureau's report shows that this substance will explode when as little as 2 per cent is present in a mixture with air. The experiments were so conducted that the results would be applicable to industrial conditions where large volumes of butadiene-air mixtures are involved.

Tests revealed that when the gas as properly mixed with air, at ordinary room temperatures and pressure, it will propagate a flame if the percentage of butadiene is anywhere from 2 to 11.5 per cent by volume.

Mid-American Chemurgic Conference

Rubber will come in for considerable discussion at the Third Mid-American Chemurgic Conference of Agriculture, Industry and Science to be held at the Hotel Gibson in Cincinnati, Ohio, on November 17 and 18, under the auspices of the National Chemurgic Conference. Four papers on rubber will be given at the general session on the afternoon of November 17, as follows: *Rubber from Petroleum,* by a speaker to be announced; *Rubber from the Farm,* by D. Howard Doane, Doane Agricultural Service, St. Louis, Mo.; *Processing Synthetic Rubber,* by Dr. R. V. Yohe, B. F. Goodrich Co., Akron, Ohio; and *Progress Report on Natural and Synthetic Rubber,* by Dr. Paul J. Kolachov, Joseph E. Seagram & Sons, Inc., Louisville, Kentucky.

Properties of Zinc Oxides

The October, 1942, issue of *The Activator,* house organ of the New Jersey Zinc Co., 160 Front St., New York City, includes a description of the properties of the several brands of zinc oxide in general use in the rubber industry. The data presented brings up to date that which appears in the last edition of the booklet on "Zinc Pigments for Rubber" issued by the company. The issue also contains some interesting photographs of the company's new rubber laboratory.

FULL PROGRAM FEATURES NEW YORK GROUP MEETING

Two technical papers, a sound movie, and a quizz on synthetic rubber were the features of the Fall meeting of the New York Group, Rubber Division, A.C.S., held at the Building Trades Club in New York City on October 16. Approximately 300 members and guests were in attendance. The movie, presented through the courtesy of Esso Marketers, was "Bouncing Molecules," a color film which traces the production of butadiene. A few brief introductory remarks were given by J. A. Ulrich of the Esso Marketers organization.

The first speaker was H. H. Abernathy of the Rubber Laboratory of E. I. du Pont de Nemours & Co., Wilmington, Delaware, who discussed "The Current Importance of Synthetic Latices and a Review of One of Them." Mr. Abernathy first stressed the point that synthetic latices must now be used for many essential items and that war needs have created demands for latices which could produce films superior to rubber in important respects. He then discussed the handling, processing, compounding and characteristics of Neoprene Type Latex 571. (EDITOR'S NOTE: Mr. Abernathy's paper is reproduced in full on Page 125 of this issue).

D. F. Cranor, manager of the technical service department of the Binney & Smith Co., New York City, was the second speaker. Taking as his subject "The Reinforcement and Vulcanization of Buna S," Mr. Cranor used numerous slides to indicate the results of recent laboratory tests. He outlined the need of a more accurate nomenclature for describing the various types of carbon blacks in order to avoid misunderstanding and confusion among the rubber technologists. He then pointed out the value of considering the surface area of the blacks in selecting any particular type to provide physical properties within a certain range for specific applications.

The importance of avoiding the overcuring of Buna S compounds was emphasized by Mr. Cranor while the value of considering the old fashioned hand measures or qualitative approach, as well as physical tests, in selecting the cure with the best all-around properties was stressed. In this connection, a new test for determining the "heat embrittlement" of rubber compounds was demonstrated by Mr. E. Valden of the research laboratories of the Columbian Carbon Co.

By means of this test the time necessary for a sample of a synthetic rubber stock to break when heated to a temperature of about 160° F. and under a constant fixed load can readily be determined as an indication of cure condition most free from dangerous embrittlement effect. While this occurs at state of under cure, good technical cure develops at an early time interval thereafter, according to the speaker. Heat build-up, particularly under conditions of constant deflection, is not excessive at cures which exhibit relatively good resistance to heat brittlement.

In concluding his paper, Mr. Cranor pointed out that while Buna S magnifies differences between carbons and each type has its own especial use, the compounder can readily balance his use with available production. In this way, he stated, an adequate supply of black should be assured for wartime rubber needs.

Quiz Contest a Success

The quiz contest on synthetic rubber was put on immediately after dinner. Dr. A. A. Somerville, of the R. T. Vanderbilt Co., acted as the "professor" and was all dressed up for the part in a long flowing black gown and a high pointed cap. He first appeared wearing a rubber mask of President Roosevelt, since the identity of the "professor" was not revealed until the quiz program was held. Judges of the contest were L. A. Edland, executive vice-president of the Rodic Rubber Corp., and George Vila, of the Naugatuck Chemical Division of U. S. Rubber Co.

Two teams were selected from the audience, representing "consumers" and "peddlers." The "consumer" team was comprised of A. R. Kemp (Bell Telephone Labs.), J. Miscall (Essex Rubber), P. A. Cady (Manhattan Rubber), M. Buffington (Lea Fabrics), and S. J. Rosch (Anaconda Wire & Cable). The "peddlers" team included H. A. Depew (Sherwin-Williams), H. H. Abernathy (DuPont), Dave Scott, Sr. (Henry L. Scott Co.), J. De C. Van Etten (Vansul), and S. M. Martin, Jr. (Thiokol). The "consumer" team was declared the winner on points and prizes purchased with the group's funds were given to the members of both the winning and losing teams as well as to various members of the audience who answered questions correctly addressed to them by the "professor."

Questions used in the quiz contest included some selected from those sent in by members of the group and others compiled by the special committee handling the program, including John H. Ingmanson (Bell Telephone Labs.), L. A. Edland (Rodic Rubber), and George Vila (Naugatuck Chemical). Included among those to whom checks were sent for questions submitted and used were the following: R. L. Holmes (Raybestos-Manhattan), H. L. Fisher (U. S. Industrial Chemicals), C. R. Haynes (Binney & Smith), A. R. Davis (American Cyanamid), and D. B. Forman (DuPont).

During the meeting, Chairman F. E. Traflet appointed a Nominating Committee composed of C. R. Haynes (Binney & Smith), C. A. Bartle (DuPont), and K. J. Soule (Manhattan Rubber). The fact that Peter P. Pinto, general manager of RUBBER AGE and secretary-treasurer of the group, has completed twenty-five years of service with RUBBER AGE, was also announced.

FORD TIRE EQUIPMENT TO BE SENT TO RUSSIA

Practically all of the tire and tube equipment at the River Rouge, Michigan, plant of the Ford Motor Company will shortly be shipped to Russia under the Lend-Lease program. An arrangement for the purchase and shipment of this material has been reached with the United States Government. This announcement was made by the Ford company at Detroit on October 30.

According to the announcement, the arrangement followed brief negotiations between Rubber Director Jeffers and Edsel B. Ford, president of the Ford Motor Co., and as soon as terms of the agreement are settled "machinery will be dismantled and readied for shipment to Russia." It was intimated, however, that a portion of the Ford rubber equipment, considered to be among the best in the country, will be retained in this country for the manufacture of special rubber products for the war effort.

It has long been known in government and other circles that Russia had been promised active assistance on tire and tube manufacturing equipment under the Lend-Lease program. This commitment was made prior to the appointment of Mr. Jeffers as Rubber Director last September and he inherited the responsibility of finding the equipment. Mr. Jeffers, on being advised that Ford had decided to sell its equipment, praised the company for its prompt action in response to his specific request.

The Ford tire plant, completed in January, 1938, cost $5,600,000. It was the first tire plant in the country in which production was routed straight through from raw material to finished product and included scores of innovations in production methods. Practically all the equipment was especially designed by Ford engineers. The plant had a capacity of 16,000 tires daily and it is believed that when the equipment is installed in Russia it will produce more than a million tires annually. Russian tire dimensions are smaller than those of American tires.

N. Y. to Have Xmas Party

The executive committee of the New York Group, Rubber Division, A.C.S., has decided to hold the annual Christmas Party this year as usual. It will be held on Friday, December 18, at the Building Trades Club, 2 Park Avenue, New York City. Tickets are $2.50 for members and $5.00 for non-members and guests. Tickets can be secured from and reservations made with the secretary-treasurer of the group, Peter P. Pinto, c/o RUBBER AGE, 250 West 57th St., New York City. The meeting will be largely social in nature and will include entertainment and the usual distribution of prizes.

The complete text of Maximum Price Regulation 220 on Certain Rubber Commodities will be found on Page 164.

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EMULSIFIED PLIOFILM PRODUCT IS DEVELOPED BY GOODYEAR

Goodyear Tire & Rubber Co., Akron, in cooperation with the Peerless Photo Products Co., Shoreham, Long Island, N. Y., has developed an emulsified Pliofilm which has the property of maintaining its exact size under all conditions of wetting and handling. The emulsified Pliofilm is known as Transphoto film and it is already being used in the aircraft and other industries to speed up the fabrication of templates.

A pattern for a template, known as a master layout, is outlined on a smooth, thin sheet of metal previously coated with a priming paint. Then the emulsified sheet of Pliofilm is wet in a special solution, after which it is spread over the master layout. A brush or window-type of rubber squeegee is used next to bring the two into as close contact as possible.

After about five minutes in this position, the emulsified Pliofilm is lifted off and processed through hypo solution, familiar to photographers, then rinse water, then a bleach and finally through a transfer solution. It is much the same process as used with photographic film except that no darkroom is required.

Next the "developed" sheet of Pliofilm is pressed against a sheet of virgin metal and allowed to remain in this position several minutes. When it is removed, a bright positive image of the original layout remains on the copy sheet of metal in the form of black lines which have been formed by a deposit of metallic silver.

Goodyear officials pointed out that the Transphoto template process can be adapted also to producing similar layouts on masonite, plywood and similar non-metallic surfaces if the material is coated first with a special zinc base paint. Once the pattern has been transferred to the material from which the template is to be made, the template is finished simply by cutting along the transferred lines.

Cabot Renews Fellowship

Godfrey L. Cabot, Inc., Boston, Mass., has renewed its fellowship at Johns Hopkins University, Baltimore, Maryland, for the study of surface areas of finely divided substances. Prof. P. H. Emmett, who is in charge of the project, will be assisted by Dr. Robert B. Anderson. Dr. Anderson took his doctorate in physical chemistry at the University of Iowa in June, 1942.

New Rubber Plasticizer

A new plasticizer for use in Buna S and reclaimed rubber stocks, under the name of Plasticizer-B, has been introduced by the Beacon Co., 97 Bickford St., Boston, Mass. The new plasticizer is said to work very rapidly in milling and to cure well. It is also said to give a lasting durability to "dead" rubbers. The usual percentage used in the mix is 5 to 10% or less.

Rubber Springs in Use

The use of rubber springs on certain amphibian combat vehicles used by the American armed forces was revealed by J. D. Beebe of the B. F. Goodrich Co. on November 6 in an address before the American Society of Mechanical Engineers in New York City. The spring, which operates by rubber in torsion, was one of several examples cited by Mr. Beebe of how rubber is being utilized as an engineering material in speeding and implementing the nation's war effort. Mr. Beebe, who stated that the extreme simplicity of the spring's design and installation, and the absence of internal friction, helped it prove to be a superior suspension system for the amphibian combat vehicles, also revealed that the spring has emerged from the status of an experimental product to that of a standard item of factory production now running into the thousands of units. He predicted that the rubber spring would be widely used in automobiles in the post-war period.

Rubber Branch in New Location

The Rubber and Rubber Products Branch of the War Production Board has moved its offices from the Railroad Retirement Building to the Municipal Center Building, 4th and D Streets, Washington, D. C.

Two New Plasticizers Introduced

Two new plasticizers, under the names of Plastoflex No. 10 and Plastoflex No. 20, said to possess desirable special properties for softening synthetic rubbers, have been introduced by the Advance Solvents & Chemical Corp., 245 Fifth Ave., New York City. Plastoflex No. 10 gives normal plasticizing action with good resilience while Plastoflex No. 20 is recommended where greater softening action is essential. Both plasticizers are said to be particularly useful with Buna N, in which they have a pronounced "elasticating" effect. They show up well in Hycar OR and Perbunan stocks in providing greatly improved rebound without a large loss of tensile strength.

Drop Excise Tax on Rubber

The 10% excise tax on rubber products, other than on tires and tubes, has been eliminated from the 1942 Revenue Act which became effective on November 1. The excise tax on tires and tubes is continued as heretofore and at the same rates. According to report, the revenue of the excise tax on rubber products, provided in the 1941 Revenue Act, was far below initial estimates, in addition to which the collection costs were not compatible with the amount collected.

NON-COMBATANT GAS MASKS BEING PRODUCED AT GOODRICH PLANTS

The production program for simplified, non-combatant gas masks is being pushed forward rapidly, with shipments being made to coastal areas first. In the above reproduction, one of the woman production soldiers at one of the plants of the B. F. Goodrich Co. is shown preparing the "business end" of a face blank for attachment of the filter unit.

FALL MEETING IS HELD BY BOSTON RUBBER GROUP

Three interesting talks and an exhibit of synthetic rubber products featured the Fall Meeting of the Boston Group, Rubber Division, A. C. S., held at the University Club in Boston on October 23. The talks were given by W. D. Parrish, of the Hycar Chemical Co.; John Ball, a member of the Educational Committee of the Rubber Branch, WPB; and Ralph F. Wolf, head of the Synthetic Rubber Allocation Division of the Rubber Branch, WPB. The exhibit was sponsored by the Hycar Chemical Co. in conjunction with the B. B. Chemical Co., of Cambridge, Mass. Approximately 265 members and guests were in attendance.

Parrish Discusses Hycar

Discussing the "Compounding of Hycar OR and OS types," Mr. Parrish first took up the matter of compounding OS-10 and OS-20, the specialty types of Hycar, stressing the fact that the compounding of these materials was quite similar to that of natural rubber. He stressed the importance of proper sulfur dispersion and then stated that experiments had definitely indicated that it was preferable in the case of these materials to make a masterbatch first, adding the softeners and accelerators later. This practice simplifies the handling of these specialty synthetics. Slides were shown comparing the properties of Hycar OS-10 and OS-20 compounds with those of Hycar OR-15 and blends of OR-15 and OS-10 and OS-20.

Mr. Parrish then discussed Hycar OR-15, formerly called Hycar O.R., the oil-resistant type of synthetic rubber. This type of Hycar requires large amounts of softeners or plasticizers and for best results he again recommended that masterbatches of rubber, zinc oxide, sulfur, carbon black and stearic acid be made before adding the plasticizer. Properties of various softeners and plasticizers tested by the company were outlined. The speaker then treated with the molding and extrusion of Hycar OR-15 and with the formulation of Hycar cements. In the latter case he stated that the nitroparaffins were preferred as solvents. In concluding his address, Mr. Parrish showed recommended formulas for various compounds including tread, low set, highly-loaded, heat-resisting, soft compound, clay stock, soling type, pure gum and fast curing. Considerable discusssion followed the presentation of the paper.

Mr. Ball, the second speaker, discussed "Some Aspects of the Situation on Compounding Materials for Synthetic Rubbers." Based on several questions presented to him by the executive committee of the group, Mr. Ball delivered a clear-cut, concise talk on the present situation of rubber, including the current production and uses of Government Synthetic Rubber (Buna S), Butyl, Flexon, Neoprene, Buna N, and Thiokol, as well as the vinyl polymers, reclaimed rubber and compounding ingredients, including carbon black and solvents.

Mr. Ball first stated that the data he had compiled as the result of the questions presented by the group was based on specific information supplied by members of various WPB branches, and then gave the following information on the various materials shown:

Buna S. This rubber is being allocated now as a replacement for rubber for every purpose for which rubber is now permitted. Early in 1943 it is expected that allocations of Buna S will be combined with those of rubber. The chief uses are expected to be in tires and tubes, mechanical goods, wire insulation, footwear, and certain druggists' sundries. Amounts up to a few tons a month may be obtained now. In January, 1943, about 2,000 tons will be made; thereafter the production will increase each month up to January, 1944, to the full amount now contemplated. The present bottleneck is butadiene and is expected to remain butadiene until some time in 1943. Specifications for Buna S have been standardized, and the new polymerization plants now being built have been designed for standard operations. As greater production is realized, it is believed that Buna S will be more uniform than crude rubber and that variability will practically disappear.

Butyl. The allocation of this rubber is the same as for Buna S. The chief uses are expected to be in self-sealing gasoline tanks, balloons, boats and floats, gas masks, gas resistant clothing, possibly civilian tires and recaps, inner tubes, mechanical goods, wire insulation, footwear, and sundries. About 600 tons are expected to be available in December, 1942, and production will then increase up to January, 1944, to the full amount contemplated. Different types of Butyl rubber have been made, depending on the kind and the proportion of diolefin used. Present production is of three grades, A, B, and C, according to tensile strength. In production in the large plants it is expected that variability will be much reduced so that only one grade of each type will result. Flexon corresponds to a low tensile grade and may not be produced in large volume because its manufacture is very wasteful of raw materials needed for other purposes.

Neoprene is being allocated for established uses and also for new uses as a replacement of rubber where it will do a better job than rubber, or where it will replace more than its own weight or volume of rubber. The new uses are expected to be in hose and cable jackets, either alone or mixed with reclaimed rubber, and possibly in tires. During October about 800 tons a month should be added to the already existing production of 700 tons monthly. Further increases will be made during 1943 up to the full amount now contemplated.

Buna N. Allocations are for established uses and also for new uses as a replacement for rubber where oil resistance is of primary importance. Present plant capacity is about 1,500 tons a month, but production is only about 1,000 tons owing to an insufficient supply of acrylonitrile. The supply of acrylonitrile is expected to increase in 1943.

Thiokol. Allocations are for established uses as gasoline, oil suction, discharge, and bullet-proof hose. It is also being allocated for new uses as a replacement for rubber where oil resistance is of primary importance. The big use today is in gasoline storage cells and small gasoline bags, either frictioned or latex impregnated. Recaps for civilian tires are the biggest potential use. Present production is about 250 tons a month of Type "FA" and latex combined. A big expansion is contemplated next year to consist wholly of Type "N" to take care of possible recap requirements.

Vinyl Polymers. Koroseal and VYNW are nearly all going into wire and cable. Other replacement uses are those involving some advantage over rubber, *e.g.*, with respect to chemical resistance, flame resistance, cold resistance, and heat sealing. VYNS, VYHH, and Saran are being used almost entirely for Army and Navy replacement uses where the physical requirements are somewhat less severe than with Koroseal and VYNW, *e.g.*, raincoats and rainsuits. The only civilian uses for VYNS are for hospital sheeting and protective clothing; and the requirements for these uses will be kept at a minimum. All these polymers mentioned so far are covered by General Preference Order M-10. As of November 1, polyvinyl butyral, acetate, and alcohol will also be covered by M-10. The situation on all these polymers is critical as regards supply; therefore expansion is planned for Koroseal and VYNW. Present production of all of these polymers is about 2,500 tons a month, with an estimated 1943 production of about 3,500 tons monthly.

Reclaimed Rubber. Where reclaim can be used to save rubber, or to conserve the slowly growing supply of synthetic rubber, its use will be freely allowed; but, on the other hand, if reclaim can be replaced at any time by a substitute materials, as a vinyl polymer, that replacement will be made mandatory. In other words, no general restriction on reclaim is contemplated, but its waste will be prevented as far as possible.

Data on Compounding Ingredients

Plasticizers and Softeners. Softeners for the Buna types of synthetic rubber are readily available today, and no shortage of these materials is anticipated for the synthetic rubber program as set up today. Plasticizers for the vinyl polymers are sufficient for Army and Navy requirements. When increased production of vinyl polymers is introduced, we will have a corresponding increase of

plasticizer production. Tricresyl phosphate for plasticizing vinyl compounds is one, however, that is extremely critical today.

Accelerators and Antioxidants. On the assumption that the types of accelerators and antioxidants for synthetic rubber will be either the ones used for natural rubber or that the bulk of them will be those requiring the same raw materials and manufacturing equipment, it is expected that the demand for these materials both for synthetic rubber and natural rubber for the years 1943 and 1944 can be taken care of without undue difficulty.

Carbon Blacks. No shortage of channel blacks is expected at least until late 1944. Of the semi-reenforcing and soft blacks, present production is about 145 million pounds a year, and the approved expansion now under construction will provide for an additional 87 million pounds. Estimated requirements for these two types of blacks by the end of 1943 is about 300 million pounds. These blacks are covered by General Preference Order M-244, effective November 1.

Solvents. Benzol, toluol, and xylene are all critical, and permission to use these will be refused in cases where a petroleum distillate will suffice. Benzol is covered by General Preference Order M-137, toluol by M-34, and xylene by M-150. Petroleum solvents are freely available and are covered by General Preference Order M-150. Butyl alcohol and acetate are critical and are covered by General Preference Order M-159. Acetone is unrestricted. Methyl ethyl ketone is not critical at present, but is covered by General Preference Order M-169. Chlorinated hydrocarbon solvents are all critical and are under General Preference Order M-41.

Wolf Explains Allocations

Ralph Wolf was the third and last speaker. He discussed the reasoning behind the allocations system, stressing the point, for example, that the oil-resistant types of synthetic rubber would not be freely allocated on request but only in those cases where the specific properties of such rubber would do the most good. He warned the rubber chemists that they must learn how to use G.S.R. and Butyl and not to lull themselves into the belief that because of the nature of the products their companies produce they would continue to secure supplies of crude rubber. All branches of the industry, he stated, will have to use synthetics sooner or later. At the conclusion of his address, Mr. Wolf conducted a question-and-answer period.

At the business session, Harold S. Liddick (Davidson Rubber), James Walton (Boston Woven Hose), and Emil Krismann (Du Pont) were appointed members of the Nominating Committee. It was also announced that the next meeting of the group will be held some time in December, probably during the second week of that month.

Coming Events

Nov. 16-18. American Institute of Chemical Engineers, Annual Meeting, Hotel Netherlands Plaza, Cincinnati, Ohio.

Nov. 17-18. Third Mid-American Chemurgic Conference, Hotel Gibson, Cincinnati, Ohio.

Nov. 24-29. Second National Chemical Exposition, Sherman Hotel. Chicago, Ill.

Nov. 27. Chicago Rubber Group (in conjunction with the National Chemical Exposition), Sherman Hotel, Chicago, Ill.

Nov. 30-Dec. 4. American Society of Mechanical Engineers, Annual Meeting, New York City.

Dec. 16. Rubber & Plastics Division, Montreal Section, Society of Chemical Industry, McGill Faculty Club, Montreal, Canada.

Dec. 18. New York Rubber Group, Christmas Party, Building Trades Club, New York City.

Dec. 18. Chicago Rubber Group, Christmas Party, Morrison Hotel, Chicago, Ill.

Apr. 12-16. Spring Meeting, A.C.S., Indianapolis, Ind.

Chicago Meets November 27

The next meeting of the Chicago Group, Rubber Division, A.C.S., will be held on Friday, November 27, at the Sherman Hotel in Chicago in conjunction with the National Chemical Exposition. J. W. Crosby, sales manager of the Thiokol Corp., will speak on "Outstanding Properties of Various Types of Thiokol." Several motion pictures will also be shown, including "Rubber Goes Synthetic" and "Bouncing Molecules," both to be presented through the courtesy of the Standard Oil Development Co. James Sheridan, sales representative of the New Jersey Zinc Co., who is Chairman of the group's Christmas Party Committee, has announced that the annual Christmas Party will be held the night of December 18 in the Terrace Casino of the Morrison Hotel.

Montreal Group to Hear Cramer

Dr. H. I. Cramer, of Sharples Chemicals, Inc., Philadelphia, who is also secretary of the Rubber Division, A.C.S., will be the principal speaker at a meeting of the Rubber and Plastics Division, Montreal Section, Society of Chemical Industry, to be held at the McGill Faculty Club in Montreal on December 16. Dr. Cramer will deliver his lecture on "Synthetic Rubber." The meeting will be held jointly with that of the parent Montreal Section.

LOS ANGELES GROUP HEARS TALKS ON SYNTHETIC RUBBER

Synthetic rubber was the theme of the monthly supper meeting of the Los Angeles Group, Rubber Division, A.C.S., held at the Mayfair Hotel in Los Angeles on November 3. Approximately 130 members and guests were in attendance and several new members were voted in during the meeting.

J. A. Britton, Jr., manager of rubber sales for the Chemical Products Division of Stanco Distributors, Inc., New York City, was present at the meeting and introduced Edward Cunningham of his department who spoke at some length on Perbunan. Both Mr. Britton and Mr. Cunningham answered questions raised from the floor.

Walter Boswell, of the Dow Chemical Co., delivered a short address on Thiokol, and Herman Jordan, local representative of DuPont, discussed neoprene. Both later answered questions, in addition to which a question-and-answer forum was conducted on synthetic rubber in general by J. M. Robbins (Goodrich), A. F. Pond (U. S. Rubber), and Phil Drew (Goodyear).

At the business session, the nominating committee, headed by Gaelen K. Norton (Kirkhill), submitted the following selections for next year, all of whom were unanimously approved: Chairman, Charles J. Roese (Goodyear); Vice-Chairman, L. F. MacDonald (formerly with Goodrich); Secretary, C. M. Reinke (Reinke, Hiller & Amende); treasurer, Curtis R. Wolter (U. S. Rubber); directors, John Hoerger (Schrader), E. H. Lewis (Western Insulated Wire), and A. L. Pickard (Braun Corp.).

Vic Vodra (Vanderbilt) gave a report on the Buffalo meeting of the Rubber Division, A.C.S. E. G. Brooks (California Golf Products) rendered a report on the activities of the golf committee and a few enthusiasts agreed to turn out for a tournament to be held later this month. Color movies of the Canadian Northwest were shown.

War stamps, in the amount of $10.00, $5.00, and $3.75, purchased by the group, were distributed as prizes and went to Phil Drew, Herman Jordan and J. M. Jordan, respectively. A special prize, consisting of a $25.00 war bond, donated by Stanco Distributors, Inc., was won by Wilfred Bergs. A combination lamp and radio, donated by the Toyad Corp., through W. B. Woodmansee, local representative, was won by T. Kirk Hill. Table favors in the form of cigarettes and matches were donated by Western Insulated Wire, Inc., through E. H. Lewis, and rulers, donated by the Rubbercraft Corp., through Bill Shawger.

No supper meeting will be held in either December or January, but the group will hold a theatre party next month. The play to be seen is "The Drunkard," and up to November 1 more than 300 tickets were sold. The group will occupy the entire theatre.

AMERICAN ZINC OXIDES AVAILABLE TO INDUSTRY

There has been some confusion of late in the minds of rubber compounders as to the present availability of zinc oxide. This confusion, according to the current issue of *The Activator,* house organ of the New Jersey Zinc Co., is attributed in part to a carry-over of the situation during the early part of 1941 when, at times, the demand for both zinc oxide made from metal (French Process) and zinc oxide made from ore (American Process) exceeded the supply.

The article points out, however, that in the list of critical materials issued by WPB on August 21, 1942, only French Process zinc oxide is included in Group I, which bears the heading "available supply is inadequate for war and essential civilian uses, and in many cases, for war purposes alone," while American Process zinc oxide appears under Group III, which covers "materials available in significant quantities as substitutes for scarcer materials." In addition, states the article, zinc oxide has been eliminated from the PRP critical materials list for the fourth quarter of 1942.

With the reduced consumption of crude rubber in 1942 and the comparatively small increases in the production of synthetic rubber to date, the demand for zinc oxide has eased considerably in spite of indications that the percentage of zinc oxide on the rubber has increased somewhat. American Process zinc oxides are therefore readily available at this time.

Zinc metal, continues the article, is still in Group I of the critical list, and this situation restricts the availability of zinc oxides made from metal. Under present conditions, therefore, it is important wherever possible to use a zinc oxide made directly from ore. Where the special properties of metal oxides are essential for the production of a satisfactory product to meet important war requirements, these demands can be met. Since producers of French Process zinc oxide are required to make application to WPB for an allotment of metal to fill such requirements, it is essential that orders for such zinc oxide be accompanied by preference ratings which are passed on to WPB in order to obtain the necessary metal.

The Revertex Corporation of America has given up its Chicago office, formerly located at 53 West Jackson Boulevard. The Chicago territory will be serviced from the home office in Long Island City, N. Y., until further notice.

Albert E. Starkie Co., manufacturers and distributors of miscellaneous rubber chemicals, has announced the removal of its Oak Park sales and service office to 5461 West Division St., Chicago. The telephone number is Austin 3004.

Washington Appointments

R. D. WOOLERY, secretary, treasurer and general manager of the Polson Rubber Co., Garrettsville, Ohio, for the past ten years, and associated with that company for the past 26 years, has been granted a leave of absence to become rubber consultant to the Ordnance Department of the War Department.

R. D. Woolery

V. H. DINGMON, president of the Xylos Rubber Co., Akron, has been granted a leave of absence from that company and has joined the Office of the Rubber Director as manager of the scrap and reclaimed rubber division, replacing FRED TRAFLET, vice-president of the Pequanoc Rubber Co., who resigned because of illness.

FRED W. CLIMER, director of personnel for the Goodyear Tire & Rubber Co. since 1938, has joined WPB where he will be in charge of the staff assigned to joint labor-management committee production drives throughout the country.

Buffalo Holds Fall Meeting

Approximately 45 members and guests attended the Fall meeting of the Buffalo Group, Rubber Division, A.C.S., held at the Hotel Lennox in Buffalo on October 23. The prinicpal speaker was Dr. Francis F. Lucas of the Bell Telephone Laboratories, whose subject was "A Motion Picture Study of Balata and Hevea Latices, with Some Observations on Buna S and Neoprene Latices." Although this is the same title as the paper Dr. Lucas delivered before the recent meeting of the Rubber Division, A.C.S., at Buffalo, he elaborated somewhat on the technique and an interesting discussion followed the presentation. The next meeting of the group will be held in December.

FIRESTONE ENLISTS AID OF LEADING UNIVERSITIES

An arrangement between the Firestone Tire & Rubber Co. and three leading universities to work together on synthetic rubber problems was announced on October 28. The universities are Princeton University, Ohio State University and the Case School of Applied Science. These schools will have at their disposal all the results achieved to date by Firestone scientists while the special studies to be made by the university scientists will be tested and developed in the Firestone laboratories.

At Princeton, Dr. Hugh Taylor will engage in research to study the fundamental construction of synthetic rubber as compared to that of the natural product. At Ohio State, Dr. C. E. Boord, head of the department of chemistry, will conduct research to provide better utilization of the properties of present synthetic rubbers. At Case, Dr. C. F. Prutton, head of the chemistry and engineering department, will devote his work to compounding ingredients for the synthetics.

Hydron Absorptive Linings

A new product which makes concrete several times more resistant to weather and abrasion in dams, fortifications and construction projects of all types has been announced by the U. S. Rubber Co. The product is an absorptive lining for forms in which concrete is poured and is known as Hydron. By removing water and air bubbles from the surface of concrete, Hydron produces a concrete that will last longer and will have a smoother and more pleasing finish without brushing or scraping. The lining originally consisted of heavy cardboard with a rayon fabric applied to it with latex cement. When rayon became a critical material a substitute was found. When the use of latex was prohibited a dispersion of reclaimed rubber was used. When reclaim went under strict control a new adhesive was developed. As produced today, Hydron absorptive linings use no restricted materials.

Synthetic Rubber Data Available

The Synthetic Rubber Educational Committee of the Rubber Branch, WPB, which is headed by Dr. H. E. Simmons, Associate Chief of the Branch, is accumulating a small library of data supplied by the industry relative to the processing and compounding of synthetic rubber. Some of this information has been edited for technical releases to the industry but no attempt will be made to release all of it. All of the information, however, is available at the Rubber Branch to anyone in the industry who has need of it and visitors will be welcome. The address is Room 5025, Municipal Center Building, 4th and D Streets, Washington, D. C.

RUBBER ENGINEERS CITED IN NATIONAL WELDING STUDY

Engineers in the rubber industry figured prominently in the awards announced last month in the nation-wide two and one-half year $200,000 scientific welding study program sponsored by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. The study indicated a possibility of tremendous savings in costs and man hours for production of articles by arc welding for both war and peace.

An award of $500 went to Lawrence Supove, consulting engineer of Portland, Oregon, for an all-welded tire recapping machine. Recapping means that the wearing tread only is replaced. Although there are about 40 sizes of balloon tires, recapping may be effected by the use of 9 sizes of machines. A new rubber strip is placed on the tire which is clamped in the machine and steam cured. Treads are standardized to four types. The mold is machined from plate, rolled and welded to the frame. An air piston is attached for closing the mold. The cost of welded over cast construction is about 50% less.

A 25% saving in the manufacturing cost of a tire mold by arc welding over cast iron, which under 1941 conditions would amount to $500,000, resulted in a $100.00 award to James B. Ford, head of the company of the same name at Palos Verdes, California. Because of longer service life, a gross saving per year to the rubber industry of $1,750,000 is estimated. Arc welded steel design was necessary to get a mold that opened radially from the tire and one on which changes of design could be made easily.

On original unit, side sections were constructed of cast iron but unsatisfactorily, so a change to steel is anticipated. The arc welded steel molds provided for internal steam heating and suffered less corrosion. The weight per mold was reduced from 800 to 450 pounds which is important since they must be mounted on conveyors for the processing. Besides, a saving of $28 (24½%) is made per mold and a large amount of ferrous material is released for other purposes.

In addition to those mentioned, cash awards were also made to J. A. Gellatly, arc welding engineer of the Goodyear Aircraft Corp., Akron, for the establishment of a welding laboratory where the merits of samples fabricated by welding and other processes are to be compared, and to Herman T. Kraft, chief experimental engineer of the General Tire & Rubber Co., Akron, for the use of welding in repairing parts of functional machinery. The latter is the inventor of the Kraft system of retreading.

F. D. Smith Co., manufacturers of Synrub synthetic rubber products, have moved from Long Beach, Calif, to a more modern and larger plant at 801 Milford St., Glendale, Calif.

New Technical Publications

Publication Nos. 24, 25 and 26 have been issued by the British Rubber Producers' Research Association, 19 Fenchurch St., London, E.C. 3, England. All three publications form part of the program of fundamental research on rubber launched by the Association a few years ago. Publication No. 24 is entitled "Thermodynamic Study of the Elastic Extension of Rubber," by L. R. G. Treloar, and Publication No. 25, "The Interaction Between Rubber and Liquids. II. The Thermodynamical Basis of the Swelling and Solution of Rubber," by G. Gee. Publication No. 26 consists of three separate articles, as follows: (1) α-Methylenic Reactivity in Olefinic and Polyolefinic Systems, by E. H. Farmer; (2) The Course and Mechanism of Autoxidation Reactions in Olefinic and Polyolefinic Substances, Including Rubber, by E. H. Farmer, G. F. Bloomfield, A. Sundralingam and D. A. Sutton; (3) Ionic and Radical Mechanisms in Olefinic Systems, with Special Reference to Processes of Double-Bond Displacement, Vulcanization and Photo Gelling, by E. H. Farmer. All three publications are reprints of articles from the August, 1942, issue of the *Transactions of the Faraday Society.*

Malacca Plastic Rubber

The Robins Conveying Belt Co., Passaic, N. J., is stressing the use of its Malacca Plastic Rubber for several important purposes, including the maintenance of conveyor belts, the protection of sheet metal from wear, the repairing of cable insulation, and the emergency repairing of mechanical rubber goods in general. Malacca Plastic Rubber is pure gum rubber compounded for resistance to abrasion with mechanical grindings and dispersed with naphtha to a putty consistency. It is black in color and very tacky until dry. It cures on exposure to air into a tough, resilient sheet very resistant to abrasion, and is a non-conductor of electricity in usual thicknesses. It is also unaffected by heat of 180° F., is very little affected by sunlight, and is suitable for outdoor use.

Types of footwear supplied to soldiers and nurses by the Army's Quartermaster Corps. TOP ROW (by Pairs)—Army nurse's black shoes; Service shoes showing carbon rubber tap; Ski trooper's shoes; Knee-length rubber boots. SECOND ROW—Service shoes without rubber tap repair; Army nurse's white shoes; Army nurse's rubber overshoes; Enlisted man's oxfords. BOTTOM ROW (single shoes)—Mounted troops' boot; 14-inch blucher waterproof boot for extreme cold climate; rubber hip boot; Parachute jumper's boot; Rubber-bottom, leather-top shoe pack; All-rubber overshoe for Arctic; 16-inch waterproof boot. Photo, U. S. Signal Corps.

NAMES IN THE NEWS

BRYANT ROSS, sales representative of the R. T. Vanderbilt Co., New York City, who has been on "loan" to the Rubber Branch, WPB, has been recalled by Vanderbilt to take up coverage of his former territory.

ROBERT D. SPENCER, associated with the aeronautical industry for the past seven years, has been named manager of aeronautical sales and engineering of the General Tire & Rubber Co., Akron. He will direct all aviation tire design and engineering, in addition to contacting the airplane manufacturers.

W. GLEED "BILL" COE, one-time production manager of RUBBER AGE, who recently has been serving in Washington with the Army and Navy Munitions Board, has returned to the Fisk plant of U. S. Rubber at Springfield, Mass., as night supervisor.

H. I. BELKNAP, superintendent of the St. Marys Manufacturing Co., St. Marys, Ohio, a Goodyear subsidiary, was recently transferred to Akron with the Goodyear Aircraft Corp. He has been replaced at St. Marys by A. A. TEISCHER, who was with Kelly-Springfield in Cumberland, Maryland.

ELMORE J. BARUTH, manager of the Depew Container Corp., Depew, N. Y., for the past several years, has left that organization to join the McCreary Tire & Rubber Co., Indiana, Penna., as technical director.

DR. GEORGE D. KRATZ, for many years representative in the New York territory for the General Latex & Chemical Co., has left that organization to join the Eastern Regional Research Laboratory of the Bureau of Agricultural Chemistry and Engineering, Department of Agriculture, in Philadelphia, Penna.

F. V. LARKIN, associated with the Windsor, Vermont, plant of the Goodyear Tire & Rubber Co. for the past several years, has joined the Pennsylvania Rubber Co., Jeannette, Penna.

RALPH F. TEFFT, until recently a research chemist with the Barrett Division of the Allied Chemical & Dye Corp., at Edgewater, N. J., has joined the general research laboratories of the General Cable Corp. at Rome, N. Y.

A. O. BLADES, associated with the General Cable Corp. at its Perth Amboy and Rome plants for the past several years, is now working with the Rome Cable Corp., Rome, N. Y., where he is engaged on problems of applying the new synthetics to wire for jackets and insulation.

FRANK J. CARTER, general superintendent of the Sao Paulo, Brazil, plant of the Goodyear Tire & Rubber Co. since 1938, has been made personnel manager of the Goodyear Aircraft Corp. at Akron. He succeeds R. S. POPE, who was recently made director of personnel for the parent company.

PAUL A. POLSON, vice-president of the Polson Rubber Co., Garrettsville, Ohio, is now also serving as treasurer and general manager of that company. These posts were rendered vacant when R. D. WOOLERY, secretary, treasurer and general manager, was granted a leave of absence to serve as rubber consultant to the War Department.

W. K. VALENTINE, who was associated with the Norwalk Tire & Rubber Co., Norwalk, Conn., for the past 21 years, serving as purchasing agent for many years and more recently as treasurer and director, has resigned from that company and has joined the Binney & Smith Co., New York City, in a sales capacity.

JOHN P. SULLIVAN, one-time manager and secretary of the Rubber Trade Association of New York, and more recently secretary and treasurer of the Rubber and Metal Clearing Associations and the other clearing associations of Commodity Exchange, Inc., has been appointed president and director of the Copper Recovery Corp.

W. J. REUSCHER, assistant treasurer and resident comptroller of the Firestone Tire & Rubber Co. of Tennessee, Memphis, Tenn., has resigned from that company to join Bendix Home Appliances, Inc., South Bend, Ind., as secretary-treasurer.

GEORGE K. HINSHAW, manager of foreign operations for the Goodyear Tire & Rubber Co., Akron, will also act as manager of the company's development department during the absence of DR. R. P. DINSMORE, who is now on "loan" to the Office of the Rubber Director.

A. J. BAKER, formerly production manager of a group of departments for the B. F. Goodrich Co., including the cut thread and golf ball departments, has been named manager of factory personnel. Since June he has been acting as administrator of the war production drive in the Akron plants of the company.

MEL HARDER, famous member of the pitching staff of the Cleveland Indians, is now asociated with the purchasing department of the Ohio Rubber Co., Willoughby, Ohio.

WILLIAM H. MASON, director of public relations for the General Tire & Rubber Co., Akron, has been named special consultant to the War Savings Staff of the Treasury Department. He will push war bond campaigns in various industries similar to the successful campaign recently held in the rubber industry.

FERDINAND REINHARDT, associated with A. Schrader's Son Division of Scovill Mfg. Co., Inc., Brooklyn, N. Y., for the past 27 years, has been made foreman of the rubber department, succeeding the late CORNELIUS MAGEE.

EDWARD S. COE, JR., has been named manager of the New York office of the Farrel-Birmingham Co., Inc., succeeding the late E. H. THOMAS. MR. COE has been with the company since 1936.

MONTAGUE A. CLARK, director of industrial and public relations of the Detroit plant of the U. S. Rubber Co. for the past 12 years, has been granted a leave of absence to serve as Michigan director of the War Manpower Commission.

L. J. WALDRON, formerly general sales manager of the Pennsylvania Rubber Co., Jeannette, Penna., and more recently associated with the Rubber Branch, WPB, has resigned from the latter organization to join the Dayton Rubber Mfg. Co. For the present he will be in charge of the company's Washington office.

B. J. HUMPHREY, formerly in charge of organic research in the research laboratory of the Firestone Tire & Rubber Co. at Akron, has joined the Connecticut Hard Rubber Co., New Haven, Conn., as assistant director of research.

WALTER J. MURPHY, editor and general manager of *Chemical Industries Magazine*, has been elected an alumni member of the Polytechnic Institute Corporation of Brooklyn, N. Y.

W. J. BUNNELL, former office manager of the Goodyear Tire & Rubber Co. at Manila in the Philippines, and L. M. HAYDEN, general manager of the B. F. Goodrich Co. branch in the same city, are both held captive by the Japanese, according to word which reached Akron recently.

IN THE SERVICE

J. L. "JACK" BUCKLEY, of the Development Department, U. S. Rubber Co., Passaic, N. J., has joined the Army Air Corps. He was a licensed private pilot and a reserve officer.

C. A. DAMEN, sales representative of Wishnick-Tumpeer, Inc., in the New England territory, has been inducted under the Selective Service Act. Temporarily, his territory is being covered by T. A. CALLAHAN.

LOS ANGELES NEWS

The closing date of the annual Year Book of the Los Angeles Rubber Group has been set for January 1. Phil Drew and George Steinbach are handling the details on the book which, they say, will be bigger and better than the last one, the first to be issued.

Will Snyder, formerly with the Gates Rubber Co., is now connected with the W. J. Voit Rubber Corp. as chief of synthetic rubber development.

Ed Royal and T. Kirk Hill have returned from a rather adventurous fishing trip on the Rogue River. This river flows through a wilderness of mountains and over waterfalls before it finally finds its way to the Pacific Ocean. The trip was made in a primitive boat and took seven days. Mr. Hill was leading with high fishing honors until the last moment when his companion hooked a nine-pound steel-head.

George Miller, now consulting chemical engineer to the Guayule Emergency Rubber Project at Salinas, Calif., was formerly chief chemist of the Xylos Division of the Firestone Tire & Rubber Co. at Los Angeles and was not connected with the Sierra Rubber Co. as reported in the previous issue.

E. G. Brooks, proprietor of the Golf Ball Service, 3351 Glendale Boulevard, advises that he is now producing golf balls using reclaimed rubber and is able to maintain full production as in the past. He is now doing his own milling.

The Mare Island Navy Yard, now doing most of the rubber development work for the Bureau of Ships of the U. S. Navy, is believed to be the site of the largest rubber laboratory in the world. A group of local rubber technologists recently visited the laboratory and were enthusiastic in their praise of the development work being done.

A rubber group in the Bay area is now in process of formation. About 30 prospective members attended an informal meeting recently held at the Oakland Hotel in Oakland to discuss organizational details. Vic Vodra, local representative of the R. T. Vanderbilt Co., who recently returned to the Coast from a trip to the East, attended the meeting and furnished aid on some of the details. The constitution of the Los Angeles Rubber Group is being used as a guide.

G. W. Turman, formerly connected with the Gates Rubber Co., is now associated with Lights, Inc. He recently returned from a trip to the East where he visited Washington, New York and Buffalo, attending the A.C.S. meeting in the latter city in September.

A. W. Hubbel, general controller at the local Goodrich plant, has been transferred to Akron on a special assignment.

C. A. Sickles, formerly connected with the Bank of California, is now office manager for the Los Angeles Standard Rubber Co., Inc. The company was formally incorporated on October 1.

The B. E. Dougherty Co., distributor of chemicals and raw materials to the rubber and other industries, has found it necessary to take on additional personnel and expand the size of its facilities. The office and warehouse space occupied by the company has been doubled since the first of the year.

Included in the new personnel is Charles H. Churchill, who has been connected with the rubber industry for many years, serving at one time as representative of H. Muhelstein & Co., Inc., and who in recent months has been associated with WPB. Four others have also been added to the company's staff.

Bert Dougherty, head of the company, has been active in the Los Angeles Rubber Group for many years, and has been the donor of numerous prizes. He maintains headquarters at 1807 East Olympic Boulevard.

Dick Brooks, son of E. G. Brooks, proprietor of the Golf Ball Service, has been appointed a warrant officer in the Naval Reserve and is currently attending school at Tulane University. He is a former member of the Los Angeles Rubber Group.

Prices of electric storage batteries sold by manufacturers and wholesalers are now under ceilings. The ceilings were established under Maximum Price Regulation No. 136, and were effective as of November 7.

Firestone will shortly place on the market a new type of speed regulator which can be easily attached to any car and will be exceptionally low in cost. It will serve to keep the patriotic driver within the desired 35 m.p.h. limit.

Expansion of the Navy's blimp patrol from 23 to 151 to fight the submarine menace was recently revealed by Rear Admiral R. E. Davison. The ability of the blimps to hover, stay in the air, and throttle down to low speeds lies behind their usefulness in submarine warfare.

N.A.M. Plans War Congress

Crucial problems arising from the war and affecting every American business man will be covered during the three-day War Congress of American Industry to be held at the Waldorf-Astoria in New York City on December 2, 3 and 4, under the auspices of the National Association of Manufacturers. Speakers include Donald Nelson, WPB chairman; William M. Jeffers, Rubber Director; Leon Henderson, head of OPA; and Paul V. McNutt, chairman of the War Manpower Commission. Mr. Jeffers will be one of the speakers at the opening session of the Congress.

Navy Establishes Rubber Group

Acting on a suggestion from Rubber Director Jeffers, the Navy Department has established a committee to survey and coordinate rubber conservation measures. The committee will act under the direction of James V. Forrestal, Under-Secretary, and will be headed by Arthur N. Hill, president of the Atlantic Greyhound Lines and consultant to Joseph B. Eastman, ODT director. Leonard K. Firestone, a Naval reserve officer, one of the five sons of the late Harvey S. Firestone, Sr., will assist Mr. Hill.

Tire Plant for Colombia

An arrangement has been reached between the Colombian Government and the B. F. Goodrich Co. providing for the construction of a plant in Colombia for the manufacture of 60,000 tires per year, according to a recent statement by Colombian Minister of Economy Santiagó Rivas Camacho. The plant will be equipped and managed by Goodrich.

Included among new companies selected to receive the joint Army-Navy pennant for outstanding performance in war production were the B. F. Goodrich Co. (Akron plant), General Cable Corp. (Perth Amboy and Rome plants), and A. Schrader's Son Division of Scoville Mfg. Co., Brooklyn, N. Y.

The powder bagging plant at Flora, Mississippi, which was to be operated by the General Tire & Engineering Co., a subsidiary of the General Tire & Rubber Co., for the Ordnance Department of the Army has been discontinued. After the plant was constructed it was determined that the output from other plants was more than adequate.

A new type of conveyor belt which uses steel cables in place of the customary cords of fabric has been announced by Goodyear. Although no thicker than a conveyor belt with, for example, six plies of fabric, the new belt's strength is said to be the equivalent of 14 such plies.

OBITUARIES

Louis J. Plumb

Louis Jackson Plumb, president, treasurer and general manager of the U. S. Rubber Reclaiming Co., an outstanding leader in the rubber reclaiming business for more than 30 years, died at his home, 5 Northwest Way, Bronxville, N. Y., on November 7, at the age of 58.

The late Mr. Plumb, from a photograph taken in 1929.

Death was indirectly due to coronary thrombosis.

Born in Newark, N. J., on December 6, 1883, Mr. Plumb was educated at Stevens Preparatory Institute and Princeton University, receiving his B.S. degree in 1904 and his M.A. in 1907. His master's degree was based on the presentation of a thesis on the chemistry of rubber and the methods of its analysis. For a number of years this thesis was used as a laboratory text by the rubber industry until it was eventually supplanted by more elaborate works.

Immediately after being graduated from Princeton in 1904, Mr. Plumb entered the employ of Klipstein & Co. in New York City. He remained with that organization but a few short months and then entered the employ of the U. S. Rubber Reclaiming Co., late in 1904. The company at that time was twenty years old and Frank H. Brewster was general superintendent at the plant in Buffalo, N. Y. He started as a chemist, was made chief chemist in 1908, vice-president in charge of sales in 1918, and president, treasurer and general manager in 1922, holding the latter positions for twenty years until his death.

Vitally interested in the rubber reclaiming industry, Mr. Plumb is credited with being among the first, if not the first, to establish brands of reclaimed rubber on a purely technical basis, such as standardizing the product on guaranteed content of rubber, acetone extract, and physical characteristics. He prepared some of the earliest bulletins and reports furnishing the rubber industry with technical data on reclaim and what to expect from the various types. He cooperated with the government in the preparation and dissemination of information on reclaim.

Long associated with the activities of the American Chemical Society, Mr. Plumb was affiliated with the Rubber Chemistry Section, predecessor of the present Division of Rubber Chemistry, almost since its inception in 1909. In 1919 he was a member of the Executive Committee of the Rubber Section and in the same year was chairman of the Section's Jar Ring Committee which cooperated with the Department of Agriculture on the standardization of jar rings.

Mr. Plumb was also very active in the affairs of the Rubber Association of America, predecessor of the Rubber Manufacturers Association, serving as vice-chairman of the Reclaimers Division of that group in 1924. When the Rubber Association decided to drop from its membership all companies other than outright rubber manufacturers, Mr. Plumb was one of the sponsors of the Rubber Reclaimers Association which was formally organized in June, 1929. He acted as vice-president of the latter organization in 1929, secretary and treasurer from 1930 to 1933, president from 1933 to 1936, and was chairman of the executive committee at the time of his death.

As current chairman of the executive committee of the Rubber Reclaimers Association, Mr. Plumb spent a good deal of time in Washington in recent months cooperating with WPB officials on rules and regulations concerning the production and use of reclaimed rubber. He was familiar with government procedure in these directions, because in NRA days he presented the reclaimers' code to Washington and was chairman of the code authority for reclaimed rubber.

It was difficult for Mr. Plumb to realize he was one of the "old timers" of the reclaimed rubber industry. When asked to write the "Reminiscences of an Old Timer in the Reclaimed Industry" for the August 25, 1929, issue of RUBBER AGE (a special issue devoted to scrap and reclaimed rubber), he stated that he was shocked to realize that it was twenty-five years since he had entered the employ of the U. S. Rubber Reclaiming Co. Nevertheless, he wrote the "reminiscences" which made and still make historical reading.

Mr. Plumb, in addition to his affiliation with the Rubber Reclaimers Association and the American Chemical Society, was a member of the American Electro-Chemical Society, and the Princeton Club of New York and the Siwanoy and Larchmont Country Clubs. He was an excellent golfer.

Funeral services were held at Bronxville on November 9 with interment in Kensico Cemetery. Survivors include a widow, the former Anna Scott; a daughter, Mrs. James English, Jr., of New Haven, Conn.; and two sons, John S. Plumb, factory manager of the U. S. Rubber Reclaiming Co. plant in Buffalo, N. Y., and Davis S. Plumb, of Springfield, Mass.

Cornelius Magee

Cornelius Magee, foreman of the rubber department of A. Schrader's Son Division of Scovill Mfg. Co., Inc., for the past 27 years, died on August 29, at the age of 66. Born in Trenton, N. J., Mr. Magee was engaged in various branches of rubber manufacturing for forty-seven years. He was one of the founders of the Corning Rubber Co., Brooklyn, N. Y., and prior to that was associated with the S. S. White Dental Mfg. Co., Staten Island, N. Y., as foreman of their rubber department. He left a widow and four daughters.

Clyde Coleman

Clyde Coleman, research chemist associated with the General Laboratories of the U. S. Rubber Co. at Passaic, N. J., died at his home in Ho-Ho-Kus, N. J., on November 6 at the age of 59. Born in Galesburg, Ill., Mr. Coleman received a B.S. degree from Williams College and a Ph.D. degree from the University of Chicago. Prior to joining U. S. Rubber he worked for DuPont and for E. R. Squibb & Sons. During the last war he developed processes for making T.N.T. and dyes. At the time of his death he was engaged on synthetic rubber problems. A widow survives.

The *Newark (N.J.) Evening News* is distributing a special wedge-shaped sticker, the object of which is to remind the motorist that the national speed limit is 35 miles per hour. The wedge is cut at the 35-mile mark and when the motorist drives faster than 35 m.p.h. the speedometer pointer disappears.

The Navy Board for Production Awards has announced that a second All-Navy "E" Award has been won by the Farrel-Birmingham Co., Inc. Each of the company's three plants have earned the privilege of flying the Navy "E" burgee with a white star added.

A wall poster devoted to the proper care of rubber conveyor belting is now being distributed by the Robins Conveying Belt Co., Passaic, N. J. Recommendations for the proper use of such belting are also given.

Chicago Group Hears Drogin

Dr. I. Drogin, director of research of the United Carbon Co., Charleston, W. Va., was the principal speaker at a meeting of the Chicago Group, Rubber Division, A.C.S., held at the Bismark Hotel in Chicago on October 16. The meeting was attended by approximately 140 members and guests.

Taking as his subject "A Study of Carbon Black in Natural and Synthetic Rubbers," Dr. Drogin reviewed results obtained in recent laboratory research. He first showed how the different synthetic rubbers compared with each other and with natural rubber in a pure gum compound and then indicated that of fourteen commonly available fillers, including zinc oxide, lithopone and magnesium carbonate, channel process carbon black is best suited for the reinforcement of Buna S.

The speaker then traced the progress in the reinforcement of smoked sheet, Buna S, Buna N and Butyl B rubbers by increased loadings of Kosmobile 77, a channel process black. This was followed by a description of eight types of blacks, seven of which are produced by different processes, their manufacture and their reinforcement values when compared at a black loading of 50 parts by weight in 100 parts of rubber.

Results obtained in various rubbers by using higher loadings of four furnace type blacks as against 50 parts loading of "soft" channel process black were also given.

(EDITOR'S NOTE: Dr. Drogin gave a similar talk at the Illinois Institute of Technology in Chicago before a large group attending a course in synthetic rubber. The course is part of the Engineering Science Management War Training Program under the auspices of the U. S. Department of Education and is in charge of Dr. H. A. Winkelmann, technical director of the Dryden Rubber Co.).

Introduce New Material

Wilmington Chemical Corp., 10 East 40th St., New York City, has introduced Thiogen, a solution of active sulfur in a pure hydrocarbon base. This new material is said to offer the possibility of readily obtaining excellent distribution of sulfur with the butadiene copolymers, particularly those of the Buna N type, where such distribution is not obtainable through ordinary compounding means. Two grades of Thiogen are now being produced commercially, Thiogen 6 and Thiogen 10, containing 6% and 10% of active sulfur, respectively. The active sulfur in the new material is actually in loose chemical combination and becomes reactive during vulcanization. The proper sulfur content and storage stability of Thiogen are said to be assured through a recently developed process of manufacture and exact analytical control. Technical data on the new material is available from the manufacturers.

Form Raincoat Association

A trade association of raincoat manufacturers in New York who are working on government orders was organized on October 19 at a meeting held in New York City. Tentatively called the New York Raincoat Manufacturers Association, the new group is headed by Simon Cohen, of the Greater New York Raincoat Co. Twelve of New York's sixteen raincoat manufacturers, with government contracts covering approximately 650,000 raincoats, are represented in the new association.

FINANCIAL NEWS

Boston Woven Hose & Rubber Co.

Year Ended August 31: Net profit of $595,798, after deduction for taxes and depreciation, equal to $6.40 each on 86,000 common shares after payment of the regular preferred dividend of $6.00 per share, which compares with $616,912, or $6.65 a common share, in the previous fiscal year. Gross sales amounted to $10,486,176, an increase of $1,338,857, or 14.6%, over the $9,147,319 grossed in the previous year. Total current assets amounted to $5,402,900 on September 1, 1942, as compared with $4,644,373 at the end of the previous year.

Monsanto Chemical Co.

First Nine Months: Net income of $3,978,435, after provision for income taxes, equal to $2.65 a common share, which compares with $4,974,189, or $3.57 a share, reported for the corresponding period of 1941. Net sales amounted to $50,269,773, an increase of 7½% over the 1941 period. The 1942 earnings included $710,268, or 57 cents a share, representing 10% of excess profits tax which is returnable after the war.

Rome Cable Corporation

Third Quarter: Net profit of $51,620, equal to 27c each on 189,830 capital shares, which compares with $65,898, or 34c a share, in the preceding quarter and $121,648, or 64c a share, in the corresponding quarter of 1941. For the six months ended September 30, net profit amounted to $117,518, or 61c a share, against $242,382, or $1.28 a share, for the corresponding period last year.

Electric Hose & Rubber Co.

Year Ended August 31: Net profit of $164,227, which compares with a net profit of $204,512 earned in the previous fiscal year. Taxes, it was pointed out, have increased considerably between the two periods, accounting in part for the reduced earnings.

Non-Ionic Emulsifiers

Variations in the time of polymerization and degree of polymerization of butadiene, styrene, acrylonitrile or other unsaturated compounds in the manufacture of synthetic rubber have been noted by research workers when the nature of the emulsifier has been varied. Simple variations in the anion of the soap, such as replacing sodium by potassium or ammonium, have produced marked effects. It has been suggested that non-ionic emulsifiers should prove attractive to workers in this field, since the amount and type of emulsifier used is known to have a decided effect on the softness, color and workability of the finished product. Certain non-ionic emulsifiers are available commercially. Chemically, they are the partial fatty acid esters of polyhydric alcohols. One of these esters, free from soap, known as Emulsifier S 541, is said to offer interesting possibilities. Other members of this series also seem to have potentialities. Polyhydric alcohol esters of this type, including Emulsifier S 541, are manufactured by the Glyco Products Co., 230 King St., Brooklyn, N. Y.

Yoran Joins Wishnick-Tumpeer

Dr. Calvin Yoran, until recently associated with the Featheredge Rubber Co., Chicago, has joined the staff of the research laboratories of Wishnick-Tumpeer, Inc., as chief chemist. Dr. Yoran was born in Chicago on March 5, 1908. He attended the University of Chicago, receiving his B.S. in 1930 and his Ph.D. in 1933. He joined the Featheredge Rubber Co. in 1933, was subsequently made chief chemist, and remained with the company until its dissolution. The complete assets of the company were sold at public auction last month. Dr. Yoran is the present chairman of the Chicago Rubber Group.

New Carbon Black Plant

The Southern Carbon Co. will erect a plant for the manufacture of furnace-type carbon black at Eola, Louisiana, according to Joseph L. McHugh, state conservation commissioner. The new plant, which will cost approximately $500,000, will consume gas presently being flared or vented into the air in Avoyelles Parish, about 120 miles northwest of New Orleans. About 6,000,000 feet a day of the formerly wasted product will be used and a yield of from 7 to 9 pounds per thousand cubic feet of gas is anticipated. The Southern Carbon Co. is affiliated with the Columbian Carbon Co.

U. S. Rubber Co. has already turned in more than 10,000,000 pounds of scrap iron and steel from all of its plants to the nation-wide collection campaign. This is sufficient scrap to produce 380 medium tanks. More than 3,700,000 pounds of scrap materials have been contributed by the Monsanto Chemical Co.

NEW NOVELTIES and SPECIALTIES

Cordex Corded Rubber Brushes

A full line of rubber brushes, all of which incorporate "eraser action" to "rub out the dirt," is merchandised under the name of Cordex by Cordex Products, Inc., 230 Fifth Ave., New

York City. The line includes a heavy duty scrubber with squeegee, a heavy duty broom, a household utility broom, and bench scrubbing, sink, glass cleaner, lavatory, bath, and curry brushes. The heavy duty scrubber is equipped with a squeegee and handle and brace. It can be used on all types of floors, such as wood, concrete, terrazzo and linoleum, and cleans more thoroughly with less soaps and detergents than other types of brushes, according to the manufacturers. The squeegee on the reverse side of the brush cleans and drys the floor. The heavy duty broom will not clog or mat and can be rinsed out without any danger of deterioration. Because there are no bristles in any of the brushes to drop out there is no shedding. The rubber strips will stand up under long hard service. The brushes list at from 50c to $3.00. The heavy duty scrubber is illustrated herewith.

Safety Overshoe Combination

A climber guard and safety overshoe combination, designed to prevent accidents occurring when the hands or arms accidentally contact primaries while the feet are in contact with grounded secondaries, transformers, etc., was recently placed on the market by the Surety Rubber Co., Carrollton, Ohio. The combination consists of a high dielectric strength rubber guard that fits over the shank of any climber and a specially designed overshoe. The overshoe has a kid leather finish, semi-rolled edge sole, outside flaps for ample protection, and a white edge to distinguish from other rubbers made for general use. The combination was especially designed for dry weather use.

Note: Some of the products described on these pages were introduced prior to the new rubber regulations and restrictions. Therefore, some of them may no longer be commercially available and it is suggested that correspondence concerning them be directed to the respective manufacturers. The descriptions are being published as a matter of record.

Galocha Moderna Overshoes

The Galocha Moderna Rubber Overshoes, made entirely of pure Para rubber by Galocha Moderna, Limitada, Rio de Janeiro, Brazil, was recently introduced to the United States market. These overshoes are unlined and fully elastic, so that they stretch like a rubber band. It is easy to fit since it adapts itself to the size and shape of the shoe. Because of this feature, only three sizes are necessary, small, medium and large. Galocha Modernas are easy to carry, folding up to pocket size, and are perspiration proof, non-skid and streamlined. A. K. Mauro, Widener Building, Philadelphia, Penna., is the general agent for the company in this country.

Goodyear Neolite Soles

Neolite soles, made from a new and different type of plastic material, the composition of which has not as yet been revealed, have been introduced by the Goodyear Tire & Rubber Co., Akron, Ohio. In the manufacture of these soles, tough natural fibers are welded together under great pressure and heat. Neolite soles are said to be absolutely uniform in quality and to give twice the wear of conventional leather soles.

M.S.A. Ear Defenders

For reducing the detrimental effects of noise upon workers, the Mine Safety Appliances Co., Pittsburgh, Penna., has developed the M.S.A. Ear Defenders. Scientifically designed, each Ear Defender is a tapered tube molded from surgical-type soft rubber. It consists of two barriers, an outer one of metal and an inner one of rubber, separated by an air space. This tapered construction permits easy insertion and withdrawal without any danger of coming in contact with the ear drum. The Ear Defenders can be cleaned with soap and water. They are packed in a plastic

pocket container, with spring hinge cover, so they may be kept clean when not in use. Although reducing loud noises by 35-45 decibels, or to about 1/10th of their loudness, M.S.A. Ear Defenders are so designed that warning signals and conversation can be heard.

Sponge Rubber Novelties

Two new educational toys, both of which make use of sponge rubber, were recently introduced by Kits, Inc., Miamisburg, Ohio. The toys are known as the Flower Shop and Sticker-Kit Flexies, respectively. The Flower Shop,

as the name implies, contains everything necessary to make colorful wall plaques, decorative corsages, and potted flower plants out of brightly colored die-cut pieces of sponge rubber. Several miniature paper flower pots are provided, as well as printed plaques, wire reinforce-

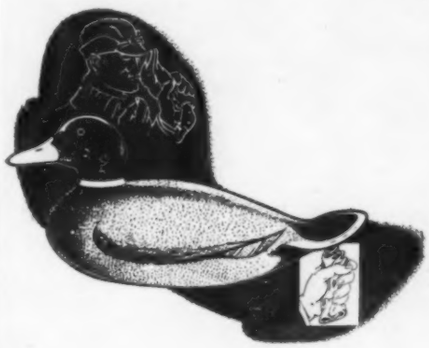
ments and cement. The Flexies set has cut-out pieces of colored sponge rubber in ten shapes and sizes so designed that they can be used to construct dozens of three-dimensional figures, such as birds, animals, barn yard fowl, trains, etc. Complete instructions are furnished with both sets, each of which is offered in two sizes, retailing at 50c and $1.00, respectively.

Fastex Rubber Bands

Fastex Rubber Bands, designed for the easy fastening of any object for display advertising purposes, were recently introduced by the Fastex Co., 2210 Edgewood Road, Cleveland, Ohio. The bands are made with a "button" top so that once slid through a slot they hold objects firmly in place. They are available in five sizes in red, blue, black, amber, green, yellow and rose. The bands are pulled through the slots with a wire hook in a pin vise handle available from the company or for short runs a simple hook can be devised from an ordinary paper clip. One of the larger rubber companies is currently using Fastex bands for attaching samples of garden hose, water bottles, and similar items, to display cards.

Collapsible Latex Duck Decoys

Described as the "answer to the hunter's prayer," collapsible latex duck decoys were developed and introduced by the Dean Rubber Mfg. Co., North



Kansas City, Mo. Deflated, the decoys, called Deancoys, weigh only four ounces each. Light and buoyant, they are anchored with a small lead sinker, never become water-logged, never ride sluggishly in the water, never need repainting, and cannot become "iced" in cold weather since ice will not form on latex. Deancoys will last for years with proper care, which means simply blowing a little talcum powder inside and outside the decoys and storing them in a cool, dark place.

Mystik Reminders

A new type of memorandum device, used by service stations to remind the motorist when last he changed his oil, lubricated the chassis, checked the battery, etc., has been developed by the Chicago Show Printing Co., 2635 North Kildare Ave., Chicago, Ill. Called Mystik Reminders, the memoradums are similar in shape and appearance to those familiar to the motorist, with the exception that they are latex coated and the coated surface is protected by a strip of holland cloth. One corner of the protective backing is notched out, with an arrow pointing to the notch, so that the user can grasp and easily strip off the holland cloth prior to pasting the reminder on the customer's car, generally in the door jamb or on the instrument panel. Mystik Reminders adhere firmly to any smooth hard surface, which must be dry and clean before application.

P. A. W. Sealing Tape

Under the trade-name of P.A.W. Sealing Tape, a new neoprene-impregnated tape which speeds up the gasketing of riveted seams in marine construction has been introduced by the Fabrikoid Division of E. I. du Pont de Nemours & Co., Fairfield, Conn. The tape is of cotton fabric, double faced with a neoprene corrosion-resisting compound. On each surface a layer of dry cement is added. In applying the tape to a metal surface, the dry cement on one side is moistened with kerosene, benzene, or other light oil, and the tape is then pressed into place. To complete the joint, the outer surface of the tape is moistened and the second metal member placed in position. If the joint is not completed with a permanent fastener within 24 to 48 hours, the cement can be resoftened by applying kerosene. The new tape is supplied in rolls of various widths and in 17/1000 and 50/1000 thicknesses.

Climax Bricklayers Tape

Intended to provide maximum protection for workmen's hands where gloves are too cumbersome to use, Climax Bricklayers Tape was introduced recently by the U. S. Rubber Co., New York City. The tape consists of strong cotton cloth rubberized on both sides. It

is white in color. Only new rubber is used so that the finished product will not injure or discolor the skin. It is furnished in 30-foot rolls in individual cartons only.

Rubber Mesh Filter

A specially-designed rubber "cushion", for use between filter plate and filter medium, has been introduced by the Paramount Rubber Service, Inc., Detroit, Mich. Known as "Filtomesh," it is applicable to all types of filters in which the filter medium is backed by a channeled or perforated plate or disc. Although corrosive-resistant, it is not recommended for use with concentrated acids at elevated temperatures. Filtomesh has meshes of approximately ¼-inch diameter. It is made of pure gum stock and contains no injurious materials. Its use, according to the manufacturer, prevents the filtering medium from clogging, and increases efficiency by at least 50%. It prevents filter cloth, paper or fiberglas from sealing against the filter plate, thus shutting off the filtering area. Drainage channels in the filter plate cannot become choked by pressure of cloth against plate.

Paravar Rubber Paint

Para ar Rubber Paint was recently introduced by the Dominion Rubber Co., Ltd., Montreal, Canada. According to a series of tests conducted in the pulp and paper industry by the company, Paravar films withstand up to 20% caustic solutions at room temperature, other fixed alkalis and ammonia, dilute acids and acid fumes up to 130° F., concentrated acids for short periods at room temperature, water up to 130° F., dilute chlorine solutions and sulfur dioxide fumes. Hydrocarbon oils have little effect on the paint, which, however, does not stand up well to acetic acid and acetate solutions and vegetable oils, animal fats or soaps. Paravar may be brushed or sprayed.

Homocord Conveyor Belt

The development of Homocord, said to be the first and only conveyor belt possessing the virtues of a cord belt, but with the drawbar strength and resistance to fatigue to hold metal fasteners as well as conventional conveyor belts, was recently announced by the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. The construction of the belt, which employs neither standard weave nor standard cord design, was the outgrowth of studies of the causes of failure and of ways to overcome them. To accomplish this, a different type of cord was developed and then new body construction was invented particularly and only to meet the requirements of conveyor belt use.

Klear-Vu Food Saver Sets

Complete sets of clear, transparent bowl and refrigerator dish covers and bags are now on the market, packaged in handy, useful containers that may be used as cookie cannisters or as a knitting tube for holding yarns. The covers, made of Pliofilm, Goodyear's rubber derivative material, are known as Klear-Vu Food-Savers. They are made by the Klear-Vu Products Division of A. L. Siegel Co., Inc., Newark, N. J. Since

the covers are moisture-vapor proof they keep odors from escaping to contaminate other foods in the refrigerator. In addition to such protection, they also prevent moist foods from drying out or dry foods from absorbing moisture.

Maximum Price Regulation 220 — On Certain Rubber Commodities

In the judgment of the Price Administrator the maximum prices established by this regulation are and will be generally fair and equitable, will effectuate the purposes of the Emergency Price Control Act of 1942 and are necessary to adjust the provisions of the General Maximum Price Regulation to the particular circumstances of manufacturers of rubber commodities. A statement of the considerations involved in the issuance of this regulation has been issued simultaneously herewith and filed with the Division of the Federal Register.

Therefore, under the authority vested in the Price Administrator by the Emergency Price Control Act of 1942, and in accordance with Procedural Regulation No. 1 issued by the Office of Price Administration, Maximum Price Regulation No. 220 is hereby issued.

1. *Applicability of the General Maximum Price Regulations.* The provisions of Section 1 to 3, inclusive, and Sections 21 to 23, inclusive, of the General Maximum Price Regulation shall not apply to sales or deliveries of rubber commodities as defined in paragraph (a) (4) of Section 4 by the manufacturers thereof. All other sections of the General Maximum Price Regulation, together with existing and subsequent supplementary regulations (including Supplementary Regulation No. 4 to the General Maximum Price Regulation) and amendments to such sections, shall apply to sales and deliveries by such manufacturers, and are hereby incorporated by reference into this Maximum Price Regulation No. 220.

2. *Prohibition against dealing in rubber commodities above maximum prices.* (a) On and after September 19, 1942, regardless of any contract or other obligation (except as provided in paragraph (d) of this section):

(1) No manufacturer shall sell or deliver any rubber commodity at a price higher than the maximum price permitted by this Maximum Price Regulation No. 220; and

(2) No person in the course of trade or business shall buy or receive any such commodity from a manufacturer at a price higher than the maximum price permitted by this Maximum Price Regulation No. 220: Provided, That in the case of commodities for which a maximum price has been established under Sections 6 or 7 of this Maximum Price Regulation No. 220, if the purchaser shall receive from the seller a written affirmation that the seller has calculated the maximum price for the commodity in accordance with Sections 6 or 7 and has filed a report with the Office of Price Administration and if in such case the purchaser shall have no knowledge of the maximum price and no cause to doubt the accuracy of the affirmation, and provided the price paid is not in excess of the maximum price as affirmed by the seller, the purchaser shall be deemed to have complied with this section.

(b) The provisions of paragraph (a) (2) of this section shall not be applicable to any war procurement agency or any contracting officer thereof, and any such contracting officer or any paying finance officer shall be relieved of any and every liability, civil or criminal, imposed by this Maximum Price Regulation No. 220 or by the Emergency Price Control Act of 1942.

(c) On and after September 19, 1942, no manufacturer shall sell, offer to sell, deliver or transfer any rubber commodity for which a maximum price must be determined under Section 8 until he has complied with the reporting and waiting provisions thereof.

(d) Nothing in this Maximum Price Regulation No. 220 shall prevent the fulfillment of contracts entered into before September 19, 1942, for the sale of rubber commodities at prices not exceeding the maximum prices established by the General Maximum Price Regulation prior to September 19, 1942.

3. *Maximum prices for rubber commodities delivered or offered for delivery during March, 1942.* The maximum price for a sale by a manufacturer of any rubber commodity which is the same as a commodity which was delivered or offered for delivery in March 1942, by the manufacturer, shall be the highest price charged by the manufacturer, during March 1942 as defined in paragraph (a) (1) of Section 4 for the commodity.

4. *Maximum prices for rubber commodities not delivered or offered for delivery during March 1942.* The maximum prices for a sale by a manufacturer of any rubber commodity which is not the same as a commodity which was delivered or offered for delivery by the manufacturer during March 1942, shall be the price determined by the first one of the four methods set forth in Sections 5, 6, 7, or 8 which applies to the commodity.

5. *First pricing method—Minor changes.* The maximum price of any commodity differing from a commodity delivered or offered for delivery by the manufacturer during March, 1942, only by reason of minor changes in material, design, or construction which do not reduce cost of materials or prevent its offering fairly equivalent serviceability shall be the maximum price of the commodity delivered or offered for delivery during that period.

6. *Second pricing method—Changes necessitated by shortages of materials or parts.* (a) *Maximum prices.* The maximum price of any commodity which cannot be priced under Section 5 and which differs from a commodity delivered or offered for delivery by the manufacturer during March, 1942, only because of changes necessitated by shortages of materials or parts, shall be the maximum price of the commodity delivered or offered for delivery during that month, adjusted by adding or subtracting the increase or decrease in direct costs resulting from the changes. The seller must determine the maximum price of a commodity priced under this section before he first offers it for sale. Once the seller has determined his maximum price for a particular commodity under this section, that price is his maximum thereafter.

In calculating the direct costs for both the commodity delivered or offered for delivery during March, 1942, and the changed commodity the manufacturer shall follow the method for computation of direct costs set forth in paragraph (a) (1) of Section 7.

(b) *Report of maximum prices.* Within five days after a purchaser first agrees to buy a commodity for which a maximum price must be determined under this section, or at any time prior thereto, the manufacturer shall report to the Office of Price Administration, Washington, D. C., the maximum price as computed by him. The report shall contain a description of the commodity delivered or offered for delivery during March, 1942, and of the commodity being priced under this section, a detailed explanation of the changes made (including any innovation in manufacturing process) and the reasons therefor and details of the computation of direct costs and of the maximum price. The manufacturer may not accept payment for the commodity until fifteen days have elapsed after the mailing of the report. Within this fifteen-day period the price so reported shall be subject to adjustment by the Office of Price Administration. Subsequent to this fifteen-day period, such price shall be subject to adjustment (not to apply retroactively) at any time upon the written order of the Office of Price Administration.

7. *Third pricing method—Other than minor changes or changes necessitated by shortages of materials or parts.* The maximum price of any commodity which cannot be priced under Section 5 or 6 shall be the price derived by the use of the following formula: The maximum price shall be the sum total of direct costs and gross margin, determined as follows:

(a) *Maximum price for the first sale—*

(1) *Computation of direct costs.* The direct costs of a commodity shall be the sum total of direct labor and direct materials costs. The direct labor costs shall be determined by multiplying the estimated number of hours of each type of labor required in the manufacture of the rubber commodity by the wage rates determined in accordance with subdivision (i) of this subparagraph (1). The direct materials costs shall be determined by multiplying the estimated quantity of each type of material required in the manufacture of the rubber com-

modity by the materials prices determined in accordance with subdivision (ii) of this subparagraph (1).

(i) Wage rates. The wage rates applicable to any commodity shall be the highest wage rates, in effect in the manufacturer's plant for any substantial portion of March, 1942, for each class of labor involved in the production of the commodity. If the manufacturer did not employ a given class of labor in March, 1942, he shall use the highest wage rates paid for any substantial portion of March, 1942, by the nearest employer operating under comparable conditions who employed that class of labor during that month.

(ii) Materials prices. The price of any materials used in the commodity being priced shall be the highest price charged during March, 1942, (as defined in paragraph (a) (1) of Section 4), by the manufacturer's supplier; except that if the Office of Price Administration has established a lower maximum price for the sale of that material to the manufacturer by his supplier, such lower price shall govern. If the material was not delivered or offered for delivery by the manufacturer's supplier during March, 1942, the material price shall be the first price at which the manufacturer's supplier offered to sell the material to a purchaser of the same class as the manufacturer after March 31, 1942, or the maximum price for the material established by the Office of Price Administration, whichever is the lower. The manufacturer's supplier shall be (a) his March, 1942, supplier of the material, or (b) lacking a March, 1942, supplier of the material, his most recent supplier of the material. If neither of these exists, it shall be his potential supplier. For the purposes of this subdivision (ii) if the manufacturer shall receive a written affirmation from the seller that the material is being sold at a price which is not in excess of the maximum price established by the Office of Price Administration, and if the manufacturer shall have no cause to doubt the accuracy of the affirmation, and if, as of the time of his determination of the price of a commodity, the maximum price of which is established by this section, the manufacturer shall have no reason to believe that the selling price of the material is in excess of the maximum price established by the Office of Price Administration, the price as affirmed by the seller shall be deemed to be the maximum price established by the Office of Price Administration for that material.

(2) *Computation of gross margin.* The "gross margin", which means the difference, expressed in dollars and cents, between the net selling price and the total direct costs, shall include only items (such as factory overhead, depreciation, commercial expense, transportation and warehouse expense, and margin of profit) that would have been used by the manufacturer in calculating the selling price for the commodity in question to a purchaser of the same class during March, 1942. The bases and rates used in the calculation of the gross margin shall be selected from the following bases and rates as provided in subdivision (iv).

(i) The bases and predetermined rates the manufacturer used during March, 1942, for the calculation of indirect costs and profit margin for a commodity having the same use as the commodity being priced. (For example, two raincoats have the same use even if made of different materials and in different styles.)

(ii) The bases and predetermined rates the manufacturer used during March, 1942, for the calculation of indirect costs and profit margin for a commodity manufactured by the same processes as the commodity being priced. (For example, two fabrics which are coated with rubber by passing through a spreader are manufactured by the same process.)

(iii) The bases and predetermined rates the manufacturer used during March, 1942, for the calculation of indirect costs and profit margin for a commodity, the total direct costs of which are the nearest to the direct costs of the commodity being priced.

(iv) In order to determine the commodity to be used in establishing the bases and rates which the manufacturer must use in calculating the gross margin of the commodity being priced, the manufacturer shall apply subdivisions (i) through (iii) of this subparagraph as follows:

(a) If only one commodity meets the requirements of subdivision (i), that commodity shall be used.

(b) If two or more commodities meet the requirements of subdivision (i), the manufacturer shall test those commodities by subdivision (ii). If only one of those commodities meets the requirements of subdivision (ii), that commodity shall be used.

(c) If more than one of those commodities meet the requirements of subdivision (ii), the manufacturer shall use that one of those commodities which is shown by the application of subdivision (iii) to have total direct costs of the commodity being priced.

(d) If two or more commodities meet the requirements of subdivision (i) but none of those commodities meets the requirements of subdivision (ii), the manufacturer shall use that one of those commodities which is shown by the application of subdivision (iii) to have total direct costs nearest to the direct costs of the commodity being priced.

(e) If no commodity meets the requirements of subdivision (i) and only one commodity meets the requirements of subdivision (ii), that commodity shall be used.

(f) If no commodity meets the requirements of subdivision (i) and two or more commodities meet the requirements of subdivision (ii), the manufacturer shall use that one of those commodities which is shown by the application of subdivision (iii) to have total direct costs nearest to the direct costs of the commodity being priced.

(g) If no commodity meets the requirements of subdivision (i) or (ii) the manufacturer shall use that commodity which is shown by the application of subdivision (iii) to have total direct costs nearest to the direct costs of the commodity priced.

(v) When used in this subparagraph (2) "predetermined rates" means gross margin rates in effect on March 1, 1942, at the estimated volume of production for the month of March, 1942, and "indirect costs" means all costs other than direct costs.

(b) *Maximum price for the second or subsequent sale of a rubber commodity, which is not a standard list item.* If a manufacturer makes a second sale of a rubber commodity the maximum price of which has been determined pursuant to the provisions of paragraph (a) of this section, the maximum price for the second sale of such commodity shall be determined in accordance with the provisions of paragraph (a) of this section, except that actual labor hours and actual quantity of materials used in the production of the first order of the commodity, adjusted for changes in technique and anticipated volume, shall be used in such determination. The maximum price determined for a second sale of a commodity under this paragraph shall be the maximum price for subsequent sales of that commodity.

(c) *Maximum price for standard list items.* If a rubber commodity, the maximum price of which has already been established by paragraph (a) of this section, is offered for sale as a standard list item, the maximum price shall be recomputed according to the provisions of paragraph (a) of this section, except that actual labor hours and actual quantity of materials used in the production of the first order of the commodity, adjusted for changes in technique and anticipated volume, shall be substituted for estimated labor hours and estimated quantity of materials used. This adjustment in the maximum price of the commodity shall be made within sixty days after the manufacturer begins the production of such commodity as a standard list item.

(d) *Reports of maximum prices.* Within five days after a purchaser first agrees to buy a commodity for which a maximum price must be determined under paragraph (a), (b) or (c) of this section, or at any time prior thereto, the manufacturer shall report to the Office of Price Administration, Washington, D. C., the maximum price as computed by him. The report shall contain a full description of the commodity being priced and of any innovation in manufacturing processes involved and a detailed explanation of the computation of the direct costs and the maximum price. It shall also contain a description of the commodity which determines the bases and rates used in the calculation of the gross margin of the commodity being priced and the maximum price, direct costs and an explanation of the reasons for the selection of that commodity. The manufacturer may not accept payment for the

commodity until fifteen days have elapsed after the mailing of the report. Within this fifteen-day period the price so reported shall be subject to adjustment by the Office of Price Administration. Subsequent to this fifteen-day period, such price shall be subject to adjustment (not to apply retroactively) at any time upon the written order of the Office of Price Administration.

8. *Fourth pricing method. Specific authorization by the Office of Price Administration.* (a) *Maximum prices.* The maximum price for any commodity which cannot be priced under Section 5, 6, or 7 shall be the price, in line with the level of maximum prices established by this Maximum Price Regulation No. 220, specifically authorized by the Office of Price Administration.

(b) *Reports of maximum prices.* Prior to first offering the commodity for sale, the manufacturer shall submit to the Office of Price Administration, Washington, D. C., a report applying for specific authorization of a maximum price. The report shall contain a description in detail of the commodity (including the manufacturing process), a statement of the facts which make it necessary to price the commodity under this section, and the proposed maximum price with a detailed explanation of its computation. Upon receipt of the authorization, the manufacturer may offer the commodity for sale in accordance with the terms of the authorization.

9. *Price differentials.* No manufacturer shall change the allowances, discounts, or other price differentials he had in effect during March, 1942, for those types of rubber commodities which he delivered or offered for delivery during that month, unless such change results in a lower price. Every manufacturer, in computing the maximum prices for sales to different classes of purchasers, of commodities the maximum prices of which are determined under Sections 5, 6, or 7 shall adjust the amount established as the maximum price for one general class of purchaser to reflect all allowances, discounts, and other price differentials which he had in effect during March, 1942, for the commodity used as a basis for determining the maximum price of the commodity being priced.

10. *Evasion.* The price limitations set forth in this Maximum Price Regulation No. 220 shall not be evaded, whether by direct or indirect methods, in connection with an offer, solicitation, agreement, sale, delivery, purchase or receipt of, or relating to, a rubber commodity, alone or in conjunction with any other commodity or by way of commission, service, transportation, or other charge, or discount, premium or other privilege, or by tying-agreement or other trade understanding, or otherwise.

11. *Application for adjustment, and petition for amendment.* (a) *Application for adjustment.*

(1) The Office of Price Administration, or any duly authorized officer thereof, may by order adjust the maximum price established under this Maximum Price Regulation No. 220 in any case in which the seller shows:

(i) That such maximum price causes him substantial hardship and is abnormally low in relation to the maximum prices established for competitive sellers of the same or similar commodities; and

(ii) That establishing for him a maximum price bearing a normal relation to the maximum prices established for competitive sellers of the same or similar commodities, will not cause or threaten to cause an increase in the level of retail prices.

Applications for adjustment under this subparagraph (1) shall be filed in accordance with Procedural Regulation No. 1.

(2) Any person seeking relief, for which no provision is made in the foregoing subparagraph (1) of this section, from a maximum price established under this Maximum Price Regulation No. 220 may present the special circumstances of his case in an application for an order of adjustment. Such an application shall be filed in accordance with Procedural Regulation No. 1 and shall set forth the facts relating to the hardship to which such maximum price subjects the applicant together with a statement of reasons why he believes that the granting of relief in his case and in all like cases will not defeat or impair the policy of the Emergency Price Control Act of 1942 and of this Maximum Price Regulation No. 220 to eliminate the danger of inflation.

(b) *Petitions for amendment.* Any person seeking a modification of any provisions of this Maximum Price Regulation No. 220 (other than an adjustment provided by paragraph (a)) may file a petition for amendment in accordance with the provisions of Procedural Regulation No. 1 issued by the Office of Price Administration.

12. *Enforcement.* (a) Persons violating any provisions of this Maximum Price Regulation No. 220 are subject to the criminal penalties, civil enforcement actions, and suits for treble damages provided for by the Emergency Price Control Act of 1942.

(b) Persons who have evidence of any violation of this Maximum Price Regulation No. 220 or any price schedule, regulation or order issued by the Office of Price Administration, or of any acts or practices which constitute such a violation, are urged to communicate with the nearest field, district, state or regional office of the Office of Price Administration or its principal office in Washington, D. C.

13. *Effect of other price regulations.* (a) This Maximum Price Regulation No. 220 shall not apply to any sale or delivery of rubber commodities for which a maximum price is in effect at the time of such sale or delivery under the provisions of any other price regulation issued, or which may be issued, by the Office of Price Administration. The General Maximum Price Regulation shall not apply to sales or deliveries of rubber commodities (as defined in paragraph (a) (4) of Section 4, except as provided in Section 1 and paragraph (d) of Section 2).

(b) Specifically, but not exclusively, this Maximum Price Regulation No. 220 is not applicable to sales or deliveries of commodities, the maximum prices of which are established by Revised Price Schedule No. 56—Reclaimed Rubber; Revised Price Schedule No. 63—Retail Prices for New Rubber Tires and Tubes; Revised Price Schedule No. 66—Retreaded and Recapped Rubber Tires, the Retreading and Recapping of Rubber Tires, and Basic Tire Carcasses; Revised Price Schedule No. 87, as Amended—Scrap Rubber; Maximum Price Regulation No. 107—Used Tires and Tubes; Maximum Price Regulation No. 119—Original Equipment Tires and Tubes; Maximum Price Regulation No. 131—Camelback; Maximum Price Regulation No. 132—Waterproof Rubber Footwear; Maximum Price Regulation No. 143—Wholesale Prices for New Rubber Tires and Tubes; Maximum Price Regulation No. 149—Mechanical Rubber Goods; Maximum Price Regulation No. 157—Sales and Fabrication of Textiles, Apparel and Related Items for Military Purposes; Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel; and Maximum Price Regulation No. 200—Rubber Heels, Attached Rubber Heels and The Attaching of Rubber Heels.

14. *Definitions.* (a) When used in this Maximum Price Regulation No. 220 the term:

(1) "highest price charged during March, 1942", means:

(i) The highest price which the seller charged to a purchaser of the same class for delivery of the commodity during March, 1942.

(ii) If the seller made no such delivery during March, 1942, such seller's highest offering price to a purchaser of the same class for delivery during that month.

(iii) If the seller made no such delivery and had no such offering price to a purchaser of the same class, the highest price charged by the seller during March, 1942, to a purchaser of a different class, adjusted to reflect the seller's customary differential between the two classes of purchasers.

(2) "Manufacturer" means any person engaged in the production of a rubber commodity.

(3) "Purchaser of the same class" and "class of purchaser" refer to the practice adopted by the seller in setting different prices for commodities for sales to different purchasers or kinds of purchasers (for example, manufacturer, wholesaler, jobber, retailer, government agency, public institution, individual consumer) or for purchasers located in different

(Continued on Page 176)

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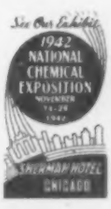

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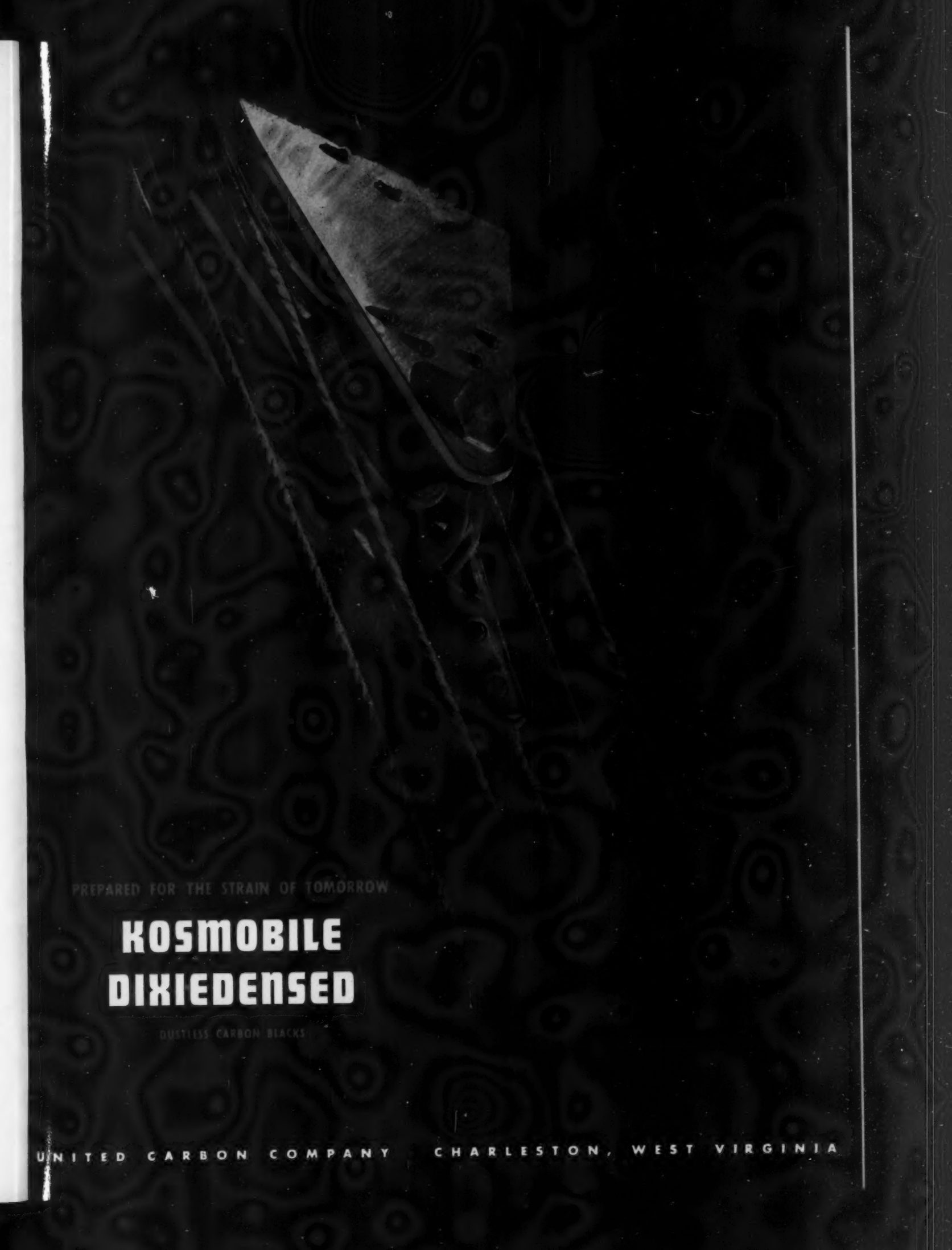
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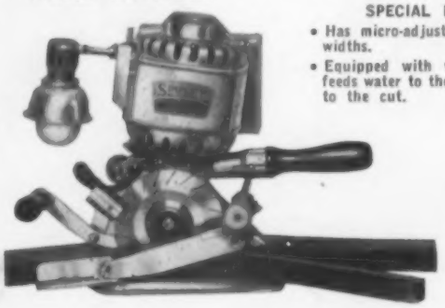

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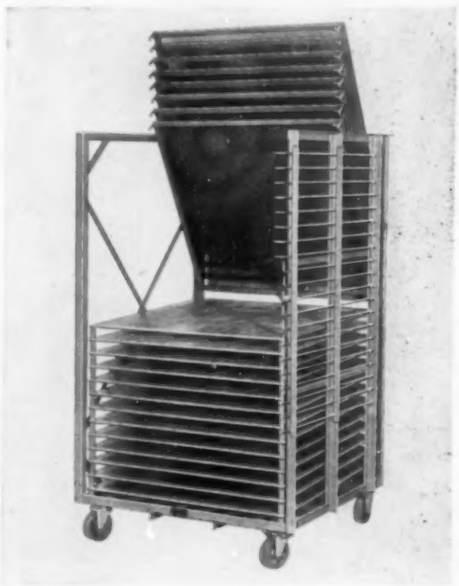
A convenient method of storing materials that require cooling, drying, aging or dusting is offered in a new stock cooling rack by the Spadone Machine Co., Inc., 122 East 25th St., New York City. They are said to be of particular advantage for handling batches of rubber when stripped from the mixing mill and equally serviceable for cooling and storing strips or



tubes produced on extruding machines. The new rack consists of twenty-one perforated metal trays supported by a welded angle iron frame. The trays are spaced about 2 inches apart and each one rests on a slight incline to permit maximum air circulation. As each tray is emptied it is raised to a vertical position, thus giving free access to the tray below. The trays are held in the vertical position (as seen in the accompanying illustration) by means of a self-locking mechanism. The frame of the rack is strongly braced at the top and bottom on all four sides and the understructure has cross pieces suitably spaced so it can be readily moved on a lift truck. Heavy duty casters can be supplied if the rack is to be subjected to continuous shifting. The rack weighs 800 pounds and is 72 inches in overall height. The trays are approximately 35 inches square and will easily accommodate a distributed weight of about 80 pounds each. Construction can be altered to suit special conditions.

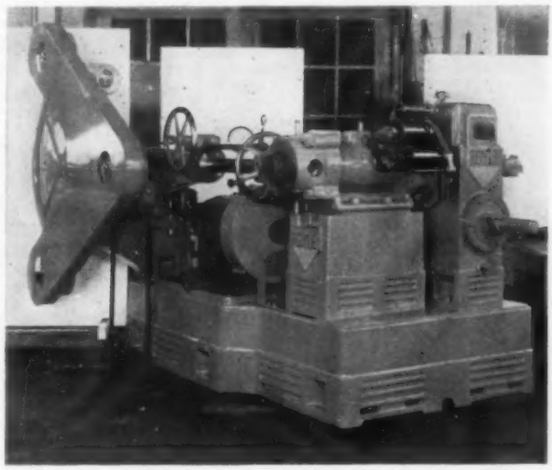
Black Rock Dipping Machine

Designed to give variable control of immersion and withdrawal speeds to suit the particular article being dipped and its coating material, a new dipping machine has been developed by the Black Rock Manufacturing Co., Bridgeport, Conn. Sizes can be furnished to meet specific requirements. The downward

and upward movement of the rack occurs at a predetermined fast and slow speed over any predetermined part of the desired length of travel. Even spreading of the coating material over the forms can be accomplished by revolving the rack manually on its axis after withdrawal from the tank. The dipping machine utilizes an oil-operated hydraulic system, believed to be the first to do so, the use of this system accounting for the smooth action of the immersion and withdrawal strokes. Draining of the tank is effected by a drain cock.

Continuous Wire Insulating Machine

John Royle & Sons, Paterson, N. J., have introduced a new improved continuous wire insulating machine which is said to be far superior in many elements to anything heretofore offered to the industry. Formerly, wire in process, during continuous vulcanizing, passed from the extruding machine to the pulling capstan and returned again through the machine group to the take-up units. By placing the capstan between the extruding machine and the take-up unit, the new Royle vulcanizing unit eliminates two undesirable wire "passes." Furthermore, by careful engineering, the new compact extruding machine gear



unit, oil gear transmission, capstan, capstan drive and splice box holder are all installed on a base occupying only 5x6 feet in floor area. The splice box is of the new bayonet or sleeve type.

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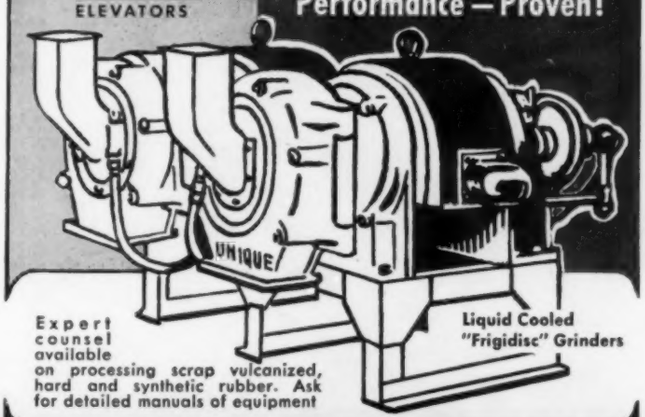

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REVIEWS

BOOKS

Plastics. By J. H. DuBois. Published by American Technical Society, Drexel Ave. at 58th St., Chicago, Ill. 5½ x 8¼ in. 291 pp. $3.00.

This book is a simplified presentation of the manufacture and use of the more important plastics materials and products, with tables of their properties and the basic design information required by engineers and designers. It omits formal chemistry as such, but explains in layman English what happens when various materials are handled in certain manners, or, in other words, the production of plastics. It is primarily intended for the user of plastics rather than the chemist or research laboratory. It also has been written to serve as a textbook for wide-awake schools whose aim is to prepare their students to meet the problems of industry.

The book has thirteen chapters in all, as well as a detailed subject index. Special chapters are devoted to a discussion of the phenolic, urea or amino, cellulose, acrylic, vinyl and styrene, cast phenolic and protein plastics. Others cover laminated plastics, compression and transfer molding, injection molding and continuous extrusion, finishing and decorating plastic products, and the design of molded products. A brief description of some of the better known synthetic rubber-like materials is included, as is a table giving the properties of these materials.

●

A.S.T.M. Standards on Textile Materials. Published by the American Society for Testing Materials, 260 So. Broad St., Philadelphia, Penna. 6 x 9 in. 440 pp. $2.25.

This latest compilation gives in their latest form each of the 73 standards on textile materials developed through the work of the A.S.T.M. In addition to the widely used specifications and tests, considerable other related information is given, including a 15-page section on photomicrographs of common textile fibers, information on basic properties, yarn number conversion table, and an important glossary of terms relating to textile materials. The compilation is issued annually under the sponsorship of Committee D-13 on Textile Materials.

BOOKLETS, CATALOGS, Etc.

The Neoprenes. By D. F. Fraser and N. L. Catton. Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware. 6¼ x 9½ in. 24 pp.

This booklet describes the various types of neoprene commercially available, including the slow-curing types (E, M and ILS) and the fast-curing types (GN, KNR, CG, FR and G). Considerable data on compounding, processing and vulcanization of these neoprenes is given.

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Tables showing a comparison of the neoprene types and the properties of neoprene compositions are also given. The booklet puts between two covers information of considerable importance to all users and prospective users of neoprene, which is the generic name applied by DuPont to its chloroprene base synthetic elastomers.

•

Use of Butyl Rubber in the Manufacture of Tires and Inner Tubes. Stanco Distributors, Inc., 26 Broadway, New York City. 8½ x 11 in. 8 pp.

This is the first released information on the use of Butyl Rubber in the manufacture of tires and tubes. It covers information obtained in actual factory operations, and includes data on compounding, quality of the finished products, precautions to be observed and cured properties. Formulas for carcasses, chafers, beads, treads and tubes are included. The point is made that large volumes of softener are not necessary with Butyl, as they are with other types of synthetic rubber, and that only enough oils should be used to obtain adequate processing qualities. The information furnished in this initial report will be supplemented by others from time to time as more information on Butyl Rubber tires and tubes becomes available.

•

An Engineering Interpretation of the Economic and Financial Aspects of American Industry. Vol. IV. The Rubber Industry. George S. Armstrong & Co., Inc., 52 Wall St., New York City. 8½ x 11 in. 56 pp.

This is an excellent economic review of the status of the rubber industry, with emphasis on the potential supplies and sources of rubber—synthetic, reclaimed and natural—rather than on the actual manufacture of rubber products. Despite the fact that the report was published just prior to the publication of the Baruch Committee report, it still makes an important contribution to the general understanding of the vital problem of rubber. Considerable attention is of course paid to synthetic rubber. In this connection, the report discusses butadiene from petroleum fractions versus ethyl alcohol, the relative capacity of the sources of supply of alcohol, butene and butane, the relative capital costs per unit of capacity for plants required to convert butadiene from both ethyl alcohol and butane, the cost of production of butadiene, and estimated costs of production of Buna S and Butyl rubbers. The report also includes a discussion of the rubber products industry in the United States and a look ahead into the future.

•

Plasticizers and Modifiers for Use with Natural and Synthetic Elastomers. Resinous Products & Chemical Co., Washington Square, Philadelphia, Penna. 8½ x 11 in. 8 pp.

Divided into two sections, this booklet discusses separately the elasticator type and the resinous type of plasticizers and softeners for natural and synthetic rubbers, the first type including dibutyl sebacate, dibenzyl sebacate, and Plasticizers C-24, 30 and 35, and the second including Resin R6-3, Paraplex AL-16, and Duraplex C-50LV. The physical properties and recommended uses of each of these products are given. A general classification of softeners is included.

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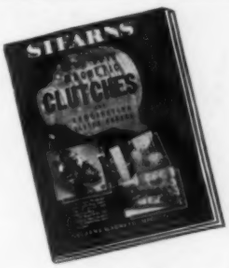

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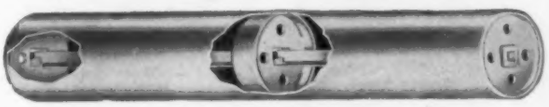
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REVIEWS (CONT'D)

Electric Equipment for Synthetic Rubber Production. (GES-3016). General Electric Co., Schenectady, N. Y. 8½ x 11 in. 52 pp.

The wide range of General Electric equipment available for the manufacture of synthetic rubber is presented in this new publication. The part electric equipment plays, from power plant to baling room, in the progressive stages of synthetic rubber production is emphasized. The booklet is divided into five major sections: Introduction and Flow Charts; Power Generation; Power Distribution; Utilization Equipment; and General Electric Service Facilities.

•

Recent improvements in **Micromax CO_2 recording equipment** are described in Catalog N-91-163 issued by Leeds & Northrup Co., Philadelphia, Penna. Full-size reproductions (in color) of round and strip-chart records are included.

A new 12-page bulletin entitled "Meehanite Castings in Defense Work", issued by the Meehanite Research Institute, 311 Ross St., Pittsburgh, Penna., describes and illustrates **Meehanite castings** used in aircraft manufacture, machine tool castings, etc.

Catalog 7140 issued by the Roller-Smith Co., Bethlehem, Penna., lists **rotary type instrument, control, transfer and auxiliary switches** available from that company. Various combinations are indicated.

Maximum Price Regulation 220

(Continued from page 166)

areas or for different quantities or grades or under different conditions of sale.

(4) "Rubber commodity" means reclaimed rubber and any commodity made in whole or in part of rubber (except airplane tires and tubes, heels, soles and drug sundries) the maximum price for which would be established by the General Maximum Price Regulation in the absence of this Maximum Price Regulation No. 220.

(5) "Rubber" means all forms and types of rubber, including synthetic, reclaimed and balata rubber.

(6) "Standard list item" means an article, the maximum price of which is listed in a schedule or price list of the manufacturer or which is offered for sale by the manufacturer at the same price to any member of a particular class of purchasers.

(7) "Synthetic rubber" means rubber of the butadiene-styrene-copolymer, perbunan, neoprene, and butyl types and any other rubber-like substance which is capable of being vulcanized.

(b) Unless the context otherwise requires, the definitions set forth in Section 302 of the Emergency Price Control Act of 1942 shall apply to other terms used herein.

15. *Geographical applicability.* The provisions of this Maximum Price Regulation No. 220 shall be applicable to the forty-eight states and the District of Columbia, but not to the territories and possessions of the United States.

16. *Effective date.* This Maximum Price Regulation No. 220 shall become effective September 19, 1942, for all sales and deliveries except sales and deliveries to the United States or any agency thereof, or to the Government of any country whose defense the President deems vital to the defense of the United States under the terms of the Act of March 11, 1941, entitled "An Act to promote the defense of the United States," or any agency of any such government. For such sales and deliveries it shall become effective October 10, 1942.

Issued this 14th day of September, 1942.

LEON HENDERSON,
Administrator

MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, NOV. 10, 1942

Crude Rubber

FURTHER information has been made available in recent weeks with regard to crude rubber activities in Latin America. This included the announcement that an agreement has been reached with Haiti under which that country will develop a 100,000-acre plantation grown to *cryptostegia grandiflora,* the rubber-producing vine in which much faith is placed by rubber interests. The Haitian-American Development Corporation (known as Shada) will eventually employ 100,000 men, or one man per acre.

It has also been learned that the *New York Daily News,* which has expressed considerable dissatisfaction with the rubber administration at Washington in the past, has started an experimental planting of its own on *cryptostegia grandiflora.* Land has been leased near Brownsville, Texas, and plantings have already been made. Governmental cooperation has been promised on the project.

The use of airplanes in connection with delivering supplies to jungle interiors and bringing out the rubber continues to develop. According to the Office of the Coordinator for Inter-American Affairs, air service has been established for rubber gatherers in a far-off corner of Peru. Preliminary test flights have already been made and regular service is anticipated shortly. Cargo planes are known to be carrying medical supplies into the interiors of various Latin American countries, and some of these planes are bringing rubber out. Under arrangements made with the Rubber Reserve Co., a shipment of approximately seven tons of rubber will shortly be flown (if it has not already been flown) to the United States. The rubber was collected from wild trees in the Panama jungles.

There is also a report, not officially confirmed to date, that an agreement has been reached with Venezuela under which Rubber Reserve will secure all rubber produced in that country in excess of 800 tons per year, the amount apparently needed annually for domestic consumption.

Prices shown below are those set by Rubber Reserve:

As of November 10
Fixed Government Prices

Plantations—			
Ribbed Smoked Sheets—			
No. 1 Spot	—	@	.22½
No. 2	—	@	.22¼
No. 3	—	@	.22
No. 4	—	@	.21¾
Thin Latex Crepe	—	@	.23⅛
Thick Latex Crepe	—	@	.23⅛
Brown Crepe, No. 1	—	@	.21⅜
Brown Crepe No. 2	—	@	.21⅛
Amber Crepe, No. 2	—	@	.21⅜
Amber Crepe, No. 3	—	@	.21⅛
Brown Crepe, Rolled	—	@	.17⅛
Latex—			
Normal, carload lots, tanks	—	@	.2595
Normal, carload lots, drums	—	@	.2825
Conc., carload lots, tanks	—	@	.2765
Conc., carload lots, drums	—	@	.2950
Guayule—			
Ampar	—	@	.28
Paras—			
Up-River, fine	—	@	—
Acre Bolivian, fine	—	@	—
Balata—			
Surinam Sheet	—	@	.81
Prime Manaos Block	—	@	.71
Peruvian Prime	—	@	.70
Venezuelan Block	—	@	.73

Scrap Rubber

Dealers report that scrap rubber is still flowing in fair volume into trade channels as the result of the recent nation-wide collection campaign and higher prices allowed to dealers. The price of several grades of scrap rubber, particularly tire grades, was raised substantially by the issuance last month of Amendment No. 3 to Revised Price Schedule No. 87, as Amended, and the new prices were to take effect on October 31. It has been learned, however, that the effective date of the order has been postponed until December 15 and there is a good possibility that the increases will be considerably modified. The prices shown below on typical scrap classifications are those in the original ceiling order:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$18.00
Beadless passenger tires	ton	24.00
Mixed truck tires	ton	18.00
Beadless truck tires	ton	24.00
No. 1 passenger peelings	ton	47.50
No. 1 truck peelings	ton	47.50
Gray carcass	ton	47.50
No. 2 passenger tubes	lb.	.07¾
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06¾
Mixed passenger tubes	lb.	.06¾
No. 2 truck tubes	lb.	.07½
Red truck tubes	lb.	.07¼
Black truck tubes	lb.	.05¼
Buffings	ton	35.00
Bicycle tires	ton	15.00
Air bags and water bags	ton	15.00
Boots and shoes	ton	33.00
Black mechanical scrap, above 1.10	ton	20.00

Tire Fabrics

The situation in the tire fabric field remains unchanged, with practically no demand for such fabrics. Consequently, prices are nominal and in many quarters are not even being quoted. The prices shown below are those which were in force on or about January 15.

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb.	.43½ @	.44
Peeler, carded, 23/4/3	lb.	.44½ @	.45
Peeler, carded, 15/3/3	lb.	.41½ @	.42
Peeler, carded, 15/4/2	lb.	.41½ @	.42
Peeler, carded, 13/3/3	lb.	.40½ @	.41
CHAFERS			
Carded, American, 1⅛"	lb.	.43½ @	.44
Carded, America, 1"	lb.	.39½ @	.48

Sheetings

48x40	36 in.	5.50	lb.	—	@ 7.818
40x40	36 in.	6.15	lb.	—	@ 6.991
40x36	36 in.	6.50	lb.	—	@ 6.615
48x48	40 in.	2.50	lb.	—	@16.200
48x48	40 in.	2.85	lb.	—	@14.210
56x60	40 in.	3.60	lb.	—	@11.944
48x44	40 in.	3.75	lb.	—	@11.066

Note: Prices shown above are ceiling prices set by order of the O.P.A. Quotations are based on an average price of 15-16-inch middling cotton of 20.37c at the ten designated southern markets.

Cotton

The price for middling uplands on the Commodity Exchange has moved in the comparatively narrow range of 65 points since our last report, high being 20.40 on November 5 and low, 19.75 on October 14. The price climbed slowly but steadily from mid-October until the end of the month, encouraged by price fixations and accelerated spot buying. Hedges and liquidation halted the rise from time to time, but trade buying strengthened and contributed to a fairly firm market. With the past few days the Crop Reporting Board of the Department of Agriculture forecast a domestic crop of 13,329,000 bales. This estimate represents a decrease of 489,000 bales from the previous one of 13,818,000 bales as of October 1 and compares with the estimate of 13,422,000 bales estimated by the *Journal of Commerce.* Despite the fact that the government's estimate was smaller than expected by the trade, it has failed to have any material effect on prices in the New York market. This is attributed in part to the successful undertaking in Africa launched by the American armed forces. Quotations for middling uplands on the Exchange follow:

	Oct. 13	November 10		
	Close	High	Low	Close
December	18.09	18.64	18.56	18.63
March	18.34	18.74	18.67	18.74
July	....	18.92	18.81	18.87

Reclaimed Rubber

Slightly better demand for reclaim than in recent months is reported by reclaimers who expect a substantial pick-up in demand as soon as the civilian tire program of the government gets fully under way. This program calls for the production of approximately 25,000,000 tires in the next eighteen months. The tires will be made completely of reclaim with the exception of about four ounces of crude rubber. These tires, called War Tires, are now in production at most of the tire plants and some of them are already moving into commercial channels. At present, substantial stocks of reclaim are available. Prices shown below are ceilings on typical grades:

Shoe				
Unwashed	lb.	.07	@	.07¼
Tube				
Black Tube	lb.	.11¼	@	.11½
Red Tube	lb.	.12	@	.12¼
Tires				
Black (acid process)	lb.	.07½	@	.07¾
Black, selected tires	lb.	.06½	@	.06¾
Truck, Heavy Gravity	lb.	.08½	@	.08¾
Miscellaneous				
Mechanical blends	lb.	.04½	@	.05½
White	lb.	.13	@	.13¼

Ducks

Enameling (single filling)	lb.	—	@ .44¼
Belting and Hose	lb.	—	@ .39
Single filling, A grade	lb.	—	@ .19¾
Double filling, A grade	lb.	—	@ .20¼

CHEMICAL MARKETS

New York, Nov. 12, 1942
All Prices F.O.B. Works

ACCELERATORS

Organic

A-1 (Thiocarbanilid)	lb.	.28 @	.33
A-10	lb.	.36 @	.42
A-11	lb.	.52 @	.65
A-19	lb.	.52 @	.65
A-32	lb.	.60 @	.70
A-77	lb.	.42 @	.55
A-100	lb.	.42 @	.55
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	.43 @	.45
Beutene	lb.	.59 @	.64
B-J-F	lb.	.38 @	.43
Butyl Zimate	lb.	— @	1.13
Captax	lb.	.38 @	.40
Crylene	lb.	.40 @	.47
Di-Ortho-Tolyguanidine	lb.	.44 @	.46
Diphenylguanidine	lb.	.35 @	.36
El-Sixty	lb.	.40 @	.47
Ethyl Zimate	lb.	— @	1.13
Ethylidene aniline	lb.	.42 @	.43
Formaldehyde aniline	lb.	.31 @	—
Guantal	lb.	.40 @	.50
Hepteen	lb.	.34 @	.39
Hexamethylenetetramine	lb.	.33 @	—
Lead Oleate, No. 999	lb.	.13 @	—
Witco	lb.	.15 @	—
Ledate	lb.	— @	1.48
Methyl Tuads	lb.	— @	1.53
Methyl Zimate	lb.	— @	1.23
Monex	lb.	— @	1.53
Pentex	lb.	.74 @	.84
Phenex	lb.	.50 @	.55
Pip-Pip	lb.	— @	1.65
R & H 50-D	lb.	.42 @	.43
R-2	lb.	1.40 @	1.80
R-2 Crystals	lb.	1.55 @	1.70
Rotax	lb.	.48 @	.50
Safex	lb.	1.15 @	1.25
Selenac	lb.	— @	1.98
SPDX	lb.	.70 @	.75
Super-Sulfur No. 2	lb.	.13 @	.15
Thiocarbanilid, drums	lb.	.28 @	.33
Thiurad	lb.	— @	1.55
Trimene	lb.	.54 @	.64
base	lb.	1.03 @	1.18
Triphenylguanidine	lb.	.45 @	—
Ulto	lb.	1.25 @	1.75
Ureka	lb.	.50 @	.57
Illend B	lb.	.50 @	.57
Blend C	lb.	.48 @	.55
Vulcanex	lb.	.42 @	.43
Vulcanol	lb.	.85 @	—

Inorganic

Litharge, domestic	lb.	.07 @	.07½
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Next Column)

Blues [b]

Prussian	lb.	.36 @	—
Ultramarine	lb.	.17 @	.27

Browns [b]

Mapico	lb.	.1135 @	—
Umber, Turkey	lb.	.04¾ @	—

Greens [b]

Chrome	lb.	— @	.25
Guignet's Green	lb.	.70 @	—

Reds

Antimony crimson, 15/17	lb.	— @	—
sulfur, free	lb.	— @	—
Indian	lb.	.08¾ @	—
Domestic (Maroon)	lb.	.11 @	—
Mapico	lb.	.096 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red	lb.	.09¼ @	—

Whites [b]

Cryptone No. 19	lb.	.0560 @	.0585
Cryptone CB No. 21	lb.	.0560 @	.0585
Cryptone ZS-800	lb.	.0825 @	.0850
Lithopone:			
Albalith	lb.	.04¼ @	.04½
Astrolith	lb.	.04½ @	.04½
Azolith	lb.	.04¼ @	.04½
Ray-cal	lb.	.05½ @	.05¾
Rayox	lb.	.14½ @	.15¼
Titanox A	lb.	.14½ @	.14¾
Titanox B	lb.	.05¾ @	.06
Titanox C	lb.	.05½ @	.05¾

Zinc Oxide—American Process [b]

American Azo:			
ZZZ (lead free)	lb.	.07¼ @	.07½
Anaconda, lead free	lb.	.07¼ @	.07½
Horsehead Lead Free Brand:			
Special—3	lb.	.07¼ @	.07½
XX Red—4	lb.	.07¼ @	.07½
XX Red—72	lb.	.07¼ @	.07½
XX Red—103	lb.	.07¼ @	.07½
Kadox, black label—15	lb.	.07¼ @	.07½
Red label—17	lb.	.07¼ @	.07½
St. Joe, black label	lb.	.07¼ @	.07½
green label	lb.	.07¼ @	.07½
red label	lb.	.07¼ @	.07½
U. S. P.—7, bbls.	lb.	.10½ @	.10¾

[a] Price Ceilings.
[b] Price Suggestions or Agreements.

Zinc Oxide—French Process: [b]

Florence White Seal—7 bbl.	lb.	.09½ @	.09¾
Green seal—8	lb.	.09 @	.09¼
Red seal—9	lb.	.08½ @	.08¾

Yellows [b]

Cadmolith	lb.	.55 @	.60
Chrome	lb.	— @	.50
Mapico	lb.	.071 @	—

BLACKS

(In bags, carload lots)

Aerfloted Arrow	.0355 @	—
Certified	.0355 @	—
Certified Spheron	.0355 @	—
Channel "S"	.12 @	—
Continental	.0355 @	—
Disperso	.0355 @	—
Dixiedensed	.0355 @	—
Dixiedensed 66	.0355 @	—
Excello	.0355 @	—
Furnex	.03½ @	.06
Furnex Beads	.03½ @	.06
Gastex	.03½ @	.06
Kosmobile	.0355 @	—
Kosmobile 66	.0355 @	—
Kosmos-Dixie 20	.03½ @	.06
Micronex (Amarillo)	.0355 @	—
Micronex Beads (Amarillo)	.0355 @	—
Pelletex	.03½ @	.06
P-33	.0475 @	—
Shell Carbon (Del. Midwest)	.025 @	—
Supreme	.0355 @	—
Thermax	.0225 @	—
Thermax "S"	.0675 @	—
Wyex	.0355 @	—

COMPOUNDING MATERIALS

Aluminum Flake	ton	18.00	@24.50
99½%-300	ton	—	@16.50
86-90%-300	ton	—	@13.50
Asbestine	ton	16.50	@20.00
Barium carbonate (98-100%)	ton	47.00	@49.00
Barytes	ton	25.35	@36.00
Bentonite	ton	11.00	@16.00
Blanc fixe, dry	ton	60.00	@67.50
Calcene	ton	37.50	@43.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white	ton	32.50	@45.00
Clay, Aerfloted, Suprex	ton	10.00	@22.50
Aerfloted Paragon	ton	10.00	@22.50
Crown (f.o.b. plant)	ton	11.00	@ —
Dixie	ton	—	@11.00
Langford	ton	—	@ 8.50
McNamee	ton	—	@10.00
Par	ton	—	@11.00
Witco	ton	10.00	@ —
Cotton Flock (Dark)	lb.	.10½ @	.13
Kalite No. 1	ton	—	@26.00
Kalite No. 3	ton	—	@36.00
Kalvan	ton	—	@100.00
Kalvan "S"	lb.	— @	.09½
Magnesium carbonate	lb.	.06¼ @	—
Mica	ton	35.00	@44.00
Mineralite	ton	—	@30.00
Pyrax A	ton	—	@ 7.50
Rottenstone (powd. Dom.)	ton	25.50	@37.50
Rubberol	lb.	— @	.17½
Silene (calcium silicate)	lb.	.04 @	.04⅝
Starch, powdered	cwt.	2.90 @	4.10
Talc, domestic	ton	17.00	@25.00
Whiting, commercial	ton	16.00	@26.00
Columbia Filler	ton	9.00	@14.00
Witco	ton	6.00 @	—
Wood Flour (100 mesh)	ton	30.00	@32.00

MINERAL RUBBER

285°-300° Mineral Rubber	ton	25.00 @	—
Black Diamond	ton	25.00 @	—
Genasco, solid (factory)	ton	— @	—
Hard Hydrocarbon	ton	25.00	@27.00
MilliMar	lb.	— @	.05½
Parmr, solid	ton	— @	—
Pioneer, M.R. solid	ton	— @	—

MISCELLANEOUS

Aromatics—Rodo #0	lb.	4.00 @	4.50
Rodo #10	lb.	5.00 @	5.50
Curodex 19	lb.	2.75 @	—
Curodex 188	lb.	3.50 @	—
Curodex 198	lb.	4.50 @	—
Para-Dors	lb.	4.50 @	—
Aresklene No. 375	lb.	.35 @	.50
Darvan (dispersing agent)	lb.	.30 @	.34
Santomerse S	lb.	.11 @	.25
Sponge Paste	lb.	— @	.18
Sunproof	lb.	.22¾ @	.27¾
Tackol (tackifier)	lb.	.085 @	.18
Tonox	lb.	.50 @	.59
Ty-Ply	gal.	6.75 @	8.00
Unicel (blowing agent)	lb.	.50 @	—

SOFTENERS

Acids

Acetic, 28%, bbls. [a]	100 lb.	3.38 @	3.63
Nitric, 36 degrees	cwt.	5.00 @	—

Acids, Fatty

Laurex	lb.	.14¾ @	.17¼
SL #10	lb.	.12 @	.14
Stearex Beads	lb.	.10 @	.11
Stearite	lb.	.10 @	—

Alkalies

Caustic Soda, 76%	cwt.	2.70 @	5.70
Soda Ash, 58%	cwt.	1.15 @	2.98

Oils

Cycline Oil	gal.	.14 @	.2[illegible]
Degras, bbls.	lb.	.11 @	.12½
Para-Flux	gal.	.17 @	.18
Para-Lube	lb.	.046 @	.048
Petrolatum, amber [b]	lb.	.03¾ @	.04½
Pigmentaroil, tank cars	gal.	.20½ @	—
in drums	gal.	.26½ @	.27½
Pine, tanks	gal.	.55 @	—
Rosin Oil, cmpd.	gal.	.40 @	—
Rubberol	lb.	.13½ @	.14
Rubtack	lb.	.10 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	— @	—
Witco Softener No. 20	gal.	.20 @	—
Woburn No. 8, c.l.	lb.	.06 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06 @	—
coal tar	ton	19.00	@22.00
hardwood	ton	16.00	@22.50
pine, 200 lb. gr. wt.	bbl.	— @	4.50
Pigmentar, tank cars	gal.	.20½ @	—
in drums	gal.	.26½ @	.27½
Retort Pine Tar, drums	gal.	.26½ @	.27½

Solvents

Acetone, pure [a]	lb.	.07 @	—
Benzene, 90%, tank car	gal.	.14 @	—
Beta-Trichlorethane	gal.	— @	.20
Bondogen	lb.	.98 @	1.05
Carbon, bisulfide	lb.	.05 @	.08½
Carbon tetrachloride	gal.	.73 @	1.27
Dichlorethylene	lb.	— @	—
Dipentene, cml., drums	gal.	.48 @	.50
Ethylene dichloride	lb.	.07½ @	.08½
Plastogen	lb.	.07¾ @	.08
Reogen (drums)	lb.	.11½ @	.12
Rub-Sol	gal.	.09½ @	—
Trichlorethylene	lb.	.08 @	.09½
Turpentine, spirits	lb.	.78½ @	—
dest. dist., drums	gal.	.50 @	.55

Waxes

Beeswax, white [b]	lb.	.61 @	—
Carnauba, yellow [b]	lb.	.87 @	.89
Ceresin, white, dom.	lb.	.13½ @	.15
Montan, crude	lb.	.45 @	.46
Paraffin [a]			
Yellow crude scale, 124/126	lb.	.04¼ @	—
Refined, 123/125	lb.	.05¼ @	—

ANTI-OXIDANTS

Agerite Alba	lb.	1.95 @	2.05
Gel	lb.	.56 @	.58
Hipar	lb.	.64 @	.66
Powder	lb.	.48 @	.50
Resin	lb.	.48 @	.50
Resin D	lb.	.48 @	.50
White	lb.	1.23 @	1.33
Albasan	lb.	.69 @	.74
Antox	lb.	.54 @	.56
B-L-E	lb.	.48 @	.57
Flectol H	lb.	.52 @	.65
Flectol White	lb.	.90 @	1.15
Neozone A, B, C, D, E	lb.	.48 @	.63
Oxynone	lb.	.77 @	.90
Retardex	lb.	.45 @	.48
Santoflex B	lb.	.52 @	.65
Santovar A	lb.	1.15 @	1.40
S.C.R.	lb.	.33 @	.35
Stabilite	lb.	.52 @	.54
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.48 @	.57

EXTENDERS

Naftolen	lb.	.15 @	.25
Vanzak	gal.	.05 @	.06

LUBRICANTS—MOLD & RUBBER SURFACE

Aresklene	lb.	.35 @	.50
Cocoa Soapstock	lb.	.06 @	.08
Colite	gal.	.90 @	1.15
Dipex	lb.	.06 @	.08
Glycerized Liquid Lubricant	gal.	— @	1.35
Lubrex	lb.	.25 @	.30
Mineralite	ton	—	@30.00
Mold Paste	lb.	.12 @	.18
Sericite	ton	65.00	@75.00
Soap Tree Bark, cut, sifted	lb.	.06 @	.08

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.25 @	—
Amberex Type B	lb.	.18¾ @	—
Black	lb.	.08½ @	.13
White	lb.	.09 @	.15
Brown	lb.	.10 @	.14
Neophax A	lb.	.16½ @	—

VULCANIZING INGREDIENTS

Dispersed Sulfur No. 2	lb.	.08 @	.12
Sulfur Chloride, yellow (drs.)	lb.	.03 @	.08
Sulfur, rubber makers			
Refined (bags)	cwt.	2.55 @	—
Commercial (bags)	cwt.	2.20 @	—
Telloy	lb.	1.75 @	—
Vandex	lb.	1.75 @	—

The WHERE-TO-BUY Section of THE RUBBER AGE in which are listed the Products and Services of the Leading Suppliers to the Industry.

The Market Place

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Chemicals and Compounding Materials

ACCELERATOR Z 51
- Good Aging Properties
- Free from Rapid Overcure
- Safe Processing Properties
- Low Dosages for Optimum Cures

Advance Solvents & Chem. Corp.
245 Fifth Ave. New York, N. Y.

ACCELERATORS—
El-Sixty; Ureka; Ureka C; Guantal; Santocure; DPG; Pip Pip; A-10; A-32; A-46; A-100; R-2 Crystals • ANTIOXIDANTS—Flectol H, White; Santoflex B, BX; Santovar A.

MONSANTO CHEMICAL CO.
Rubber Service Dept.
1012 Second National Bldg., Akron, Ohio

AERO BRAND
RUBBER CHEMICALS
DPG—DOTG—Accelerator 49
Rubber Sulphur
American Cyanamid & Chemical Corporation
30 Rockefeller Plaza, New York, N. Y.

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 39 years.*

The Aluminum Flake Co.
Akron, Ohio

ALUMINUM HYDRATES
"Alorco" Hydrated Aluminas reinforcing pigments give many desirable properties to rubber. Send for sample.

ALUMINUM CO. OF AMERICA
1970 Gulf Bldg. Pittsburgh, Pa.

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
PITTSBURGH PLATE GLASS CO.,
COLUMBIA CHEMICAL DIV.
Grant Bldg., Pittsburgh, Pa.

CARBON BLACK— *Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

Binney & Smith Co.
41 East 42nd St. New York City

CARBON BLACK
CONTINENTAL
The Newest Name in Carbon Black offers
CONTINENTAL DUSTLESS
CONTINENTAL COMPRESSED
CONTINENTAL UNCOMPRESSED

Continental Carbon Company
295 Madison Ave., New York, N.Y.

CARBON BLACK—Aerfloted
WYEX — TX — HX
Compressed — Compact (Dustless)

J. M. Huber, Inc.
460 West 34th St. New York

CARBON BLACK
"Atlantic" Carbon Blacks meet the exacting standards of modern rubber production.

Chas. Eneu Johnson & Co., Mfrs.
Distributed by
C. P. HALL CO.
Akron — Boston — Los Angeles — Chicago

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world

UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CARBON BLACK
WITCO DISPERSO
and DUSTLESS and a
Complete Line of High Quality
Rubber Chemicals

Wishnick-Tumpeer, Inc.
295 Madison Ave., New York, N.Y.

Do you believe in Your Products?
Then you should believe in telling the rubber industry about them. The MARKET PLACE is the logical place to display your wares.

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.

Moore & Munger
33 Rector Street New York City

CHEMICALS
Carbon Black—Clay—Colors
Accelerators—Sulphur
Stocks Carried At All Times

Ernest Jacoby & Co.
79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

CHEMICALS

For Rubber	For Industry Generally	
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

NAUGATUCK CHEMICAL
Division of United States Rubber Co.
1230 SIXTH AVE. NEW YORK

CHEMICALS
For Natural & Synthetic Rubber
"PICCO" Brand—Plasticizers; Coumarone Resins; Reclaiming Oils, Coal Tar Naphthas.

Pennsylvania Industrial Chem. Corp.
Clairton Penna.

CHEMICALS
A complete line of plasticizers, resins, substitutes, fillers, etc., for Synthetic, Natural and Reclaimed Rubber.

STANDARD CHEMICAL COMPANY
Akron Savings & Loan Bldg, Akron

CHEMICALS AND MINERAL
Ingredients—Whiting, Clay, Tale, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890

Whittaker, Clark & Daniels, Inc.
260 West Broadway New York

COAL TAR CHEMICALS

Coumarone Resins	Tack Producers
Resinous Oils	Dispersing Oils
Reclaiming Oils	Softeners
Solvents	

The Neville Company
Neville Island, Pittsburgh, Penna.

The Market Place

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Chemicals and Compounding Materials (continued)

COLLOIDAL SULPHUR
COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
HEVEATEX CORPORATION
78 Goodyear Ave. Malrose, Mass.
Offices in New York, Akron, Chicago

FURNEX—FURNEX BEADS
—A cool mixing reinforcing black for Footwear and Mechanicals. Good ageing —Improved oil resistance.
Binney & Smith Co.
41 East 42nd St. New York City

PARA-DORS—
overcome odors in rubber—effectively and at low cost.
GIVAUDAN-DELAWANNA, INC.
Industrial Aromatics Division
330 West 42nd St., New York, N. Y.

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
For All Cures
MONSANTO CHEMICAL CO.
Rubber Service Dept.
1012 Second National Bldg., Akron, Ohio

GASTEX
Special Process Reinforcing BLACK. Superior aging and oil resistant properties. Low permanent set.
GENERAL ATLAS CARBON DIV., GENERAL PROPERTIES CO., INC.
60 Wall St. New York

PARA-FLUX
The Universal Softener—Adaptable, Uniform. Improves Quality—Economical.
The C. P. Hall Co.
2510 First Central Tower
Akron Ohio

COMPOUNDING Materials
Vulcanizing Agents
Accelerators
Antioxidants
Plasticizers
Dispersions
Pigments
Clays
Mineral Rubber
Aromatics
Blacks
R. T. VANDERBILT CO.
230 Park Ave. New York City

IRON OXIDES
Asbestine—Barytes—Talc—Soapstone
C. K. Williams & Co.
EASTON, PA.

PELLETEX (The pellet *Gastex*)
The special process reinforcing black in free-flowing form. Saves power; none wasted; protects adjacent colored stocks.
GENERAL ATLAS CARBON DIV., GENERAL PROPERTIES CO., INC.
60 Wall St. New York

CUMAR —Paracoumarone Resin.
A neutral gum for rubber compounding.
Samples and prices on request.
The Barrett Div.
Allied Chemical & Dye Corp.
40 Rector St. New York City

LAMP BLACKS
Produced according to the rigid specifications of the makers of EAGLE and OLD STANDARD Germantown Brands.
THE L. MARTIN COMPANY, Inc.
Unit of Columbian Carbon Co.
BINNEY & SMITH CO.
Distributor of Rubber Blacks
41 East 42nd Street New York, N. Y.

RUBBER PROCESSING OILS
For outstanding compatibility in processing natural or modern synthetic rubbers, use
SUN RUBBER PROCESSING OILS
Write
SUN OIL COMPANY
Philadelphia Pennsylvania

DU PONT Rubber Chemicals
DU PONT RUBBER COLORS
DU PONT ACCELERATORS
DU PONT ANTI-OXIDANTS
E. I. du Pont de Nemours & Co., Inc.
RUBBER CHEMICALS DIVISION
WILMINGTON, DELAWARE

MAGNESIUM OXIDE
Calcined Magnesium Oxide prepared for use in the compounding of neoprene. Full details on request.
J. T. Baker Chemical Co.
Phillipsburg New Jersey

RUBBER SUBSTITUTES
White, brown and black.
The Carter Bell Mfg. Co.
Springfield, New Jersey

EXTENDER
NAFTOLEN R 100 — Extender for Crude Rubber, Reclaim, Synthetics.
Wilmington Chemical Corporation
10 E. 40th St., New York, N. Y.

MAPICO COLORS
Pure Oxides of Iron
Yellows—Reds—Browns—Black
MAGNETIC PIGMENT CO.
Manufacturers
BINNEY & SMITH CO.
Distributors
41 East 42nd Street, New York, N. Y.

SOFTENERS
Rosin Oil — Pine Tar
Burgundy Pitch
"Galex" — a non-oxidizing Resin
National Rosin Oil & Size Co.
RKO Bldg. New York, N. Y.

FACTICE— Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
Stamford, Conn.

MOLD LUBRICANT
"Orvus" enables articles to leave molds readily; molds clean easily. Effective in hardest water. Also acts as thorough cleanser for molded and extruded rubber goods.
PROCTER & GAMBLE
Cincinnati Ohio

SOLVENTS
"Skellysolve"—A superior solvent in six different types for various uses—for making rubber cements—for many different rubber fabricating operations.
SKELLY OIL CO., SOLVENTS DIV.
Skelly Bldg., Kansas City, Mo.

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Chemicals and Compounding Materials {continued}

STEARIC ACID
STEAREX . . . CAKE or POWDER
STEAREX BEAD
Standardized Products for Rubber Compounding
MINERAL RUBBER (Parmr), TALC
SOAPSTONE
Binney & Smith Co.
41 East 42nd St. New York City

WAXES
Johnson's lustrous wax finishes retard oxidation, reduce friction, surface wear, tackiness.
S. C. JOHNSON & SON, INC.
Racine Wisc.

ZINC OXIDE PIGMENTS
The XX Reds Kadox
ZINC SULPHIDE PIGMENTS
The Cryptones The Albaliths (Lithopones)
The New Jersey Zinc Sales Co.
New York *Chicago*
Cleveland, Boston, San Francisco

SULPHURS
Rubbermakers' TIRE BRAND and TUBE BRAND. Also CRYSTEX Insoluble Sulphur, Sulphur Chloride, Caustic Soda, Carbon Bi-Sulphide, Carbon Tetra-Chloride.
Stauffer Chemical Company
2710 Graybar Bldg., New York City

ZINC OXIDES
AZO ZZZ Zinc Oxides
lead free—pure—uniform—dependable
AZO ZZZ-11 AZO ZZZ-55
AZO ZZZ-22 AZO ZZZ-44 AZO ZZZ-66
American Zinc Sales Company
Columbus, Ohio *New York*
Chicago *St. Louis*

ZINC OXIDES
Black Label Red Label Green Label
Manufactured by Our New Electrothermic Process
St. Joseph Lead Co.
250 Park Ave.. New York
Plant and Laboratory: Monaca (Josephtown), Pa.

TITANIUM PIGMENTS
TITANOX-A (Titanium Dioxide)
TITANOX-B (Titanium Barium Pigment)
TITANOX-C (Titanium Calcium Pigment)
TITANOX-L (Lead Titanate)
TITANIUM PIGMENT CORP.
SELLING AGENTS
111 Broadway, New York, N. Y.
104 S. Michigan Ave., Chicago, Ill.

The Progressive Concern Selling to Rubber Manufacturers Uses
THE MARKET PLACE
for Results

ZINC STEARATE
ZINC LAURATE
Colite Mold Lubricant for Extra High Gloss
THE BEACON COMPANY
87 Bickford St., Boston, Mass.

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BANBURYS REPAIRED
Re-building and re-surfacing rotors and mixing chambers has been our specialty for years.
INTERSTATE WELDING SERVICE
914 Miami St. Akron, Ohio

DIAL GAUGES—Thickness
For measuring the thickness of rubber and similar materials. Many models.
Frank E. Randall
248 Ash St.,
Waltham Mass.

GRINDING MILLS
SPAN grinding mill reduces soft and hard rubber to fine powder.
Made in U. S. A.
M. Pancorbo
155 John St. New York, N. Y.

CALENDER SHELLS
Gammeter's
ALL STEEL Calender Shells.
All welded. Any size.
New and better.
The W. F. GAMMETER CO.
Cadiz Ohio

DRYING MACHINERY
For Synthetic Rubber, Reclaimed Rubber, Latex Processed Materials, etc.
PROCTOR & SCHWARTZ, INC.
Seventh St. & Tabor Rd. Philadelphia, Pa.

MACHINERY—RUBBER
"Master" Tube Molds, Tire Vulcanizers, Molds and Cores, Tire Drums, Tubers, etc.
Special Machinery Built to Order
Akron Standard Mold Co.
Akron, Ohio

CUTTING DIES
Cutting and perforating dies of all types for rubber manufacturers.
Send for our quotations
Brockton Cutting Die & Machine Co.
Avon, Mass.

EXTRUDERS
The pioneer line of tubers, strainers and wire insulating machines. For latest developments inquire of
JOHN ROYLE & SONS
Paterson New Jersey

MACHINERY
L. ALBERT & SON
Trenton, N. J. Stoughton, Mass.
Los Angeles, Calif. Akron, O.

CUTTING MACHINERY
Specialists in Rubber Cutting Equipment for Bands, Crude Stock, Jar Rings, Tubes, Rollers, Washers, Treads, Cement Stock, etc.
See Black Rock for All Cutting Problems
Black Rock Manufacturing Co.
179 Osborne St. Bridgeport, Conn.

FORMS - PORCELAIN
Exclusive Manufacturers of Vitreous Porcelain Closed End Forms
No matter what shape or design—we can make it. Send blue print or sketch for our prices.
The Colonial Insulator Co.
936 Grant St. Akron, Ohio

MACHINERY
A complete service from the design of machinery to finished products of all kinds. Equipment for Plantations — also Reclaim, Latex and Rubber Plants.
Layouts — Formulas — Processes
Continental Machinery Company
305 BROADWAY, NEW YORK, N. Y.

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Machinery and Equipment {continued}

MACHINERY
Cutting, Trimming, Skiving, Cementing, Eyeletting, Cutting Dies—Eyelets.
United Shoe Machinery Corp.
140 Federal St., Boston, Mass.

MOLDS
For tires, rubber specialties and mechanical goods; general machine work.
The Akron Equipment Co.
Akron, Ohio

STOCK SHELLS
A Type for Every Need—Large Diameter—Light Weight — Extra Strong — Seamless.
National Sherardizing & Machine Co.
Hartford, Conn. Akron, Ohio

MAGNETIC EQUIPMENT of All Kinds
Separators, Clutches, Rolls, Drums, Brakes, Special Magnets
Stearns Magnetic Mfg. Co.
640 So. 28th St., Milwaukee, Wis.

Processing Equipment For Reclaiming Rubber
Attrition Mills; Conveyors; Crushers; Cutters; Elevators; "Frigidisc" Grinders; Hammer Mills; Mixers, Sifters, etc.
ROBINSON MFG. CO.
30 Church St., New York, N. Y.

TESTING MACHINES
RUBBER TENSILE TEST MACHINES
TEXTILE TESTING MACHINES
Write for Descriptive Literature
Henry L. Scott Co.
P. O. Box 963 Providence, R. I.

MANDRELS—All Types
Circular and Straight—Aluminum and Steel Licensed Under Clyde E. Lowe Co. Patents Sherardizing and Chrome Plating Machinery—Air Bag & Mandrel Polishing
National Sherardizing & Machine Co.
Hartford, Conn. Akron, Ohio

RUBBER STRIP CUTTER
Strips slab rubber up to 1" thick, 10,000 feet in 8 hours. Any width. Tolerance 1/64 to 1/100 inch. No rejects. Write for full details.
Simplex Cloth Cutting Mach. Co.
270 W. 39th St., New York, N. Y.

WEATHERING UNIT
The National X-1-A Accelerated Weathering Unit quietly evaluates substitute materials, new formulas, established products.
NATIONAL CARBON CO., INC.
Carbon Sales Div.
Cleveland, Ohio

YOUR PRODUCTS
Should be displayed in
THE MARKET PLACE
Show What You Have to Sell

SPECIAL MACHINERY
For Quality and Efficiency in Working Rubber. Consult us about your problems.
Utility Manufacturing Co.
Cudahy, Wisconsin

The Progressive Concern Selling to Rubber Manufacturers Uses THE MARKET PLACE for Results

Rubber—Crude; Scrap; Latex; Dispersions

GUAYULE RUBBER
"AMPAR" BRAND
Washed and Dried
Continental Rubber Co. of N. Y.
745 Fifth Avenue New York

CRUDE RUBBER
SCRAP RUBBER
HARD RUBBER DUST
BALATA — GUTTA PERCHA
Hermann Weber Company
67 Broad St., New York

LATEX
Normal, Concentrated, Processed
HEVEATEX CORPORATION
78 Goodyear Ave., Melrose, Mass.
Offices in New York, Akron, Chicago

CREPE RUBBER
Specialists in Latex Crepe
Charles F. Connor & Co., Inc.
110 State St., Boston, Mass.
Telephone: LAFayette 3690

CRUDE RUBBER PERMITS
Our long experience ideally equips us for the prompt, efficient handling of Manufacturers' Crude Rubber Purchase Permits.
Baird Rubber & Trading Co., Inc.
233 Broadway New York, N. Y.

LOTOL
(Compounded Latex)
Ready to use
NAUGATUCK CHEMICAL
Division of United States Rubber Co.
Rockefeller Center, New York, N. Y.
Offices in Detroit, Boston, Indianapolis

CRUDE RUBBER
SCRAP RUBBER
Also HARD RUBBER DUST
H. Muehlstein & Co., Inc.,
122 E. 42nd St., New York City
BRANCHES: Akron, Chicago, Boston Detroit, Los Angeles, London, Paris

DISPERSITE
Water Dispersed Rubber
(Reclaimed—Crude—Synthetics)
Man-made Alternate for Latex
Dispersions Process, Inc.
1230 Sixth Ave., New York, N. Y.
Offices in Detroit, Boston, Indianapolis

REVERTEX
Highly Concentrated (About 75%) Rubber Latex
Sole Distributor for U. S. A. and Canada
Revertex Corp. of America
37-08 Northern Blv'd., L. I. City, N. Y.

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Rubber [Cont'd]

RUBBER
Crude Rubber
Liquid Latex
Ernest Jacoby & Co.
79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

RUBBER—
Scrap and Crude
Also HARD RUBBER DUST
A. Schulman, Inc.
Darrow Road, Akron, Ohio
1401 Mississippi Ave., E. St. Louis, Ill.
736 Statler Bldg., Boston, Mass.
Warehouses at Akron and E. St. Louis

VULTEX— THE ONLY VULCANIZED LATEX
Insures Highest Quality, Uniformity, Economy, Simplicity of Application.
FULLY PROTECTED BY PATENTS
Also Latex and Latex Compounds
General Latex & Chemical Corp.
Successors to the Vultex Chemical Company
666 Main St. Cambridge, Mass.

Reclaimed Rubber . . . .

NERVASTRAL
RECLAIMING PROCESSES
HIGH GRADE — HIGH SPEED
HIGH ECONOMY
Rubber & Plastics Compounds Co., Inc.
30 Rockefeller Plaza, New York, N. Y.
Tel: COlumbus 5-0085

RECLAIMED RUBBER—
For All Purposes
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State of New York } ss.
County of New York }

Before me, a notary public in and for the State and county aforesaid, personally appeared Peter P. Pinto, who, having been duly sworn according to law, deposes and says that he is the Business Manager of The Rubber Age and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations, to wit:

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